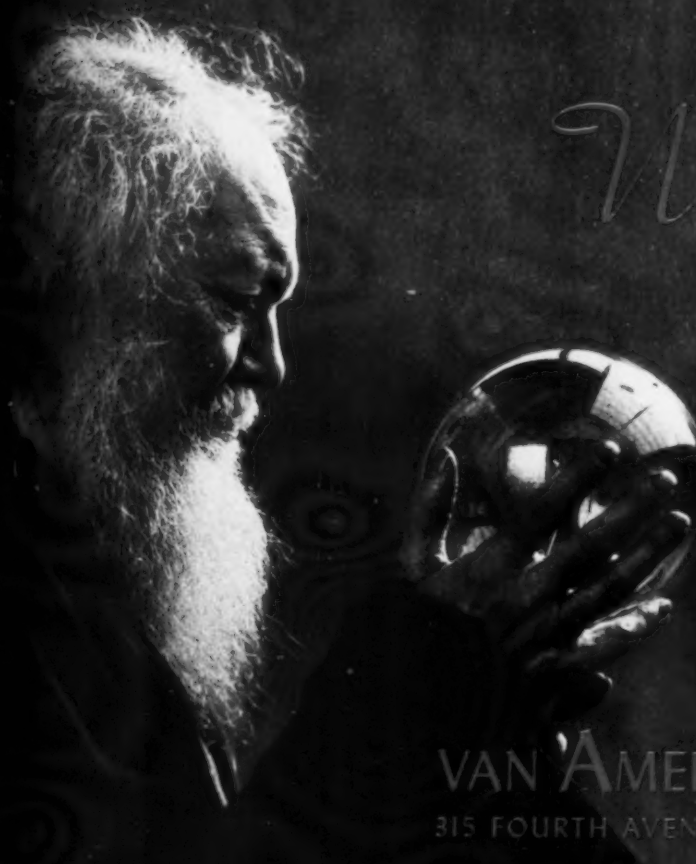


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MOSCOW
SANITARY CHEMICALS

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April 1942

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Solid

Flake

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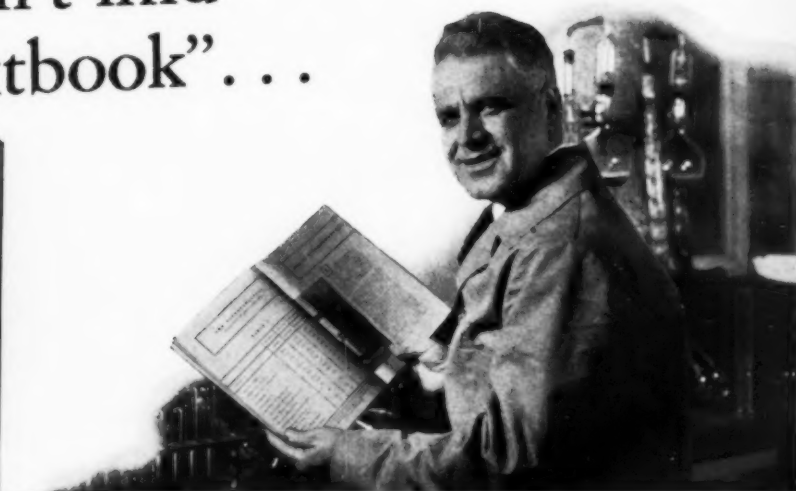
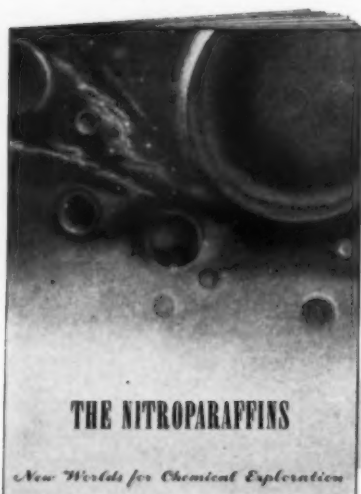
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SOAP

and

SANITARY CHEMICALS

Reg. U. S. Pat. Office

APRIL
1942

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not volcanic ash. Chemically and phys-
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Titanium Oxide	.06	.10
Calcium Oxide	.80	1.10
Magnesium Oxide	.36	.40
Soda	3.64	3.03
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YEARS OF USER-SATISFACTION ARE BEHIND THIS PRODUCT

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DAYTON, OHIO**

Aromatics for soap

BY *Albert Verley* AND COMPANY

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Now "made in U.S.A."—freeing
you from dependence on
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Aliphatic Aldehydes

- C-8 (Octyle) 100%
- C-10 (Decyl) 100%
- C-11 (Undecylenique) 100%
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Formerly these fine chemicals — with their welcome addition to the distinction and sales appeal of your perfume compositions—were available only from European sources, at prices beyond the reach of the soapmaker. • Today they are manufactured 100% in our Chicago laboratories, at practical prices, and the perfume industry is using them widely with notable success.

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It is specified where old style disinfectants are taboo. V.D.'s pleasing aroma carries on even after destroying the odor of dead rodents or putrefaction.

SO SAFE...

It is harmless to hands, fabrics, metal and paint, in all required dilutions.



Each batch receives expert bacteriological and chemical tests... supplied in phenol coefficients of 5, 10 and 15—in cans, pails and drums. Attractive private labels.

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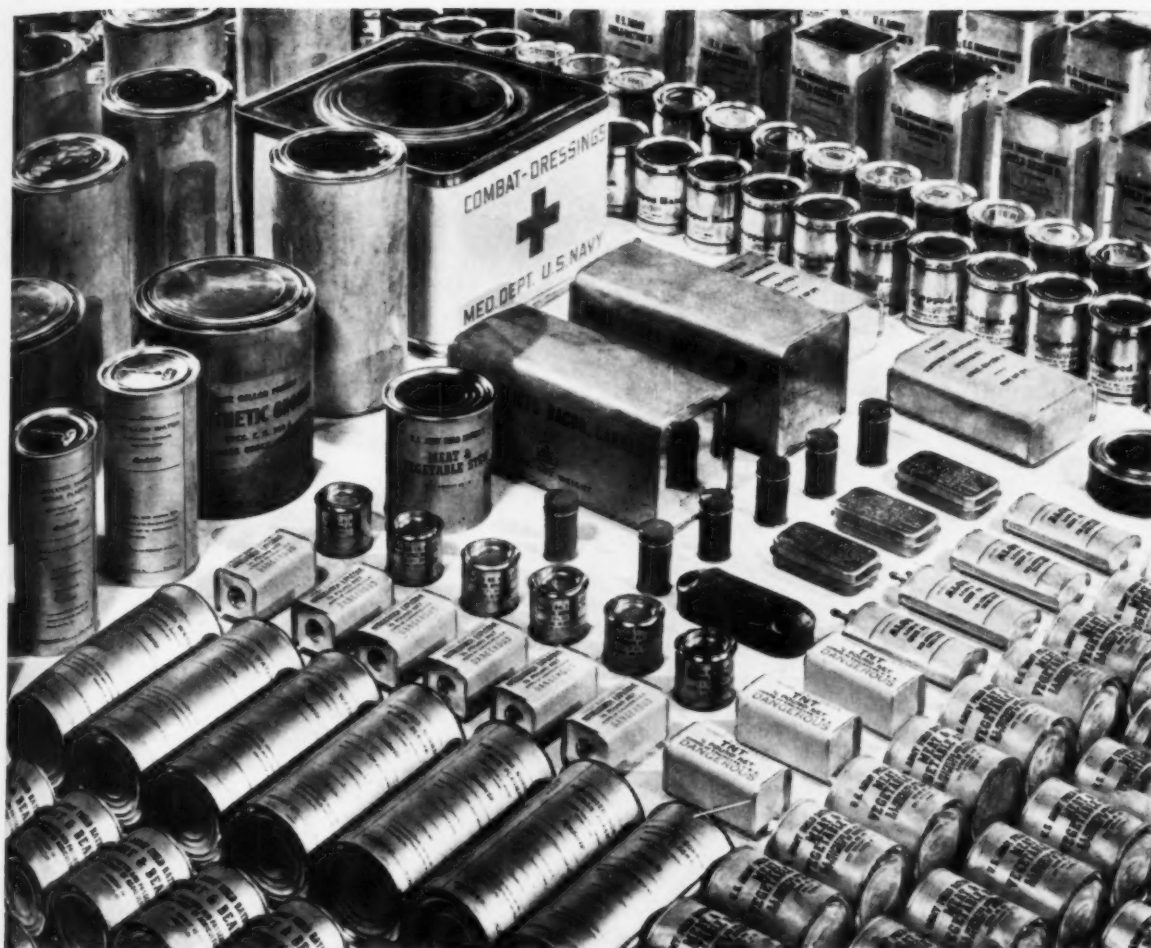
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AND QUOTATIONS

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Manufacturers of AROMATIC CHEMICALS, NATURAL DERIVATIVES, PERFUME AND FLAVOR OILS
BRANCHES IN PRINCIPAL CITIES



SOME "NON-SECRET" WEAPONS THE AXIS WOULD LIKE TO HAVE

Study the Labels on the cans and packages in the picture above.

On some of them, you'll notice "Army Sliced Bacon, Canned . . . U. S. Marine Corps Field Ration D . . . U. S. Army Meat and Vegetable Hash . . . TNT Dangerous, Corps of Engineers."

There's a container for dried human blood in the picture, too. For transfusions in the field. Another to house a delicate motor on anti-aircraft guns.

And while you'll be interested to

know that these articles are some of the many defense items the containers for which are made by the can-making and packaging industries, their significance goes far beyond this simple fact.

For they are weapons. "Non-secret" weapons, if you will. And every country has them. *But the Axis would like to have ours.* Do you realize why?

The industrial resources that produced these "non-secret" weapons are the largest in the world. The Axis needs those resources.

It needs the men . . . the machinery . . . the skill . . . the research that make the quality and the quantity of these weapons possible. It needs the energy of the free, unregimented economy which produced these weapons.

We Americans can congratulate ourselves that the Axis hasn't these resources . . . that we—not the Axis—have built the greatest packaging and can-making industries in the world . . . that we are now using the sinews of these industries to resist aggression. American Can Company, 230 Park Avenue, New York, N. Y.

EXPANDED FACILITIES

TO MEET *Your* REQUIREMENTS

In anticipation of your needs for aromatics to take the place of imported products or to replace others no longer available at home, we have enlarged our production and service facilities.

This expansion program, launched four years ago, is today enabling us to meet many of your material requirements promptly. On others, of course, our production is limited by the shortages of essential raw materials

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Where possible, we are offering substitute and alternate materials and will continue our efforts to develop new aromatics from available raw materials. If we can be of service in meeting your needs or lend experienced technical assistance in adapting available materials to your requirements, we will be glad to do so. Your inquiry will receive prompt attention.

Givaudan-Delawanna, Inc.

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One of three new still houses at Delawanna where a wide variety of specialties are produced to meet the needs of the perfume, drug, cosmetic, soap, and other industries. Each unit is designed so that it may be operated independently or in series with others - providing a volume of production to meet your demands within the limitations of raw material availability.



Compounding facilities have also been expanded to meet growing demands for new and alternate materials to replace those which are no longer obtainable due to disruption of world markets.



DELAWANNA PLANT THAT WILL AID US IN MEETING YOUR REQUIREMENTS

Nearing completion is a specially equipped "pilot-production" laboratory, available to test new processes and techniques prior to set-up of equipment for commercial manufacture.



A machine shop may seem like a far cry from making synthetic aromatic chemicals - yet our own shops at Delawanna play an important part in maintaining the efficiency and flexibility of production necessary to meet today's changing demands. Here we can promptly adapt or convert equipment for the production of the specialized materials you need.



COLUMBIA CHEMICALS



Helping Keep Production On Schedule Victory depends not only on how much—but equally on how soon each part of the job is done. For our part, we are operating at the highest possible rate of production and maintaining to the best of our ability the quality of Columbia Chemicals. At the same time, we are expanding our facilities for producing these essential industrial materials. And the purpose of this two-fold effort is to make absolutely certain that Columbia Chemicals render the greatest possible service to all who use them.

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MODIFIED SODAS • CAUSTIC ASH • PHOSFLAKE
CALCENE** • CALCIUM HYPOCHLORITE

*Precipitated Calcium Silicate **Precipitated Calcium Carbonate



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Antoine Chiris was established in France in 1768 and all through these years pioneered in the development of its long-known worldwide organizations. The American branch was established in New York in 1899.

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PERFUMES • COSMETICS • SOAPS

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For Meritorious Service
as a Replacement
for Hard-to-Get
Camphoraceous
Oils

CAM-O-SASS
MM & R

*NEW
Made of 100%
U.S.A. Ingredients

Something New
Has Been Added
(for the duration!)

"SOMETHING new has been added" by the M M & R laboratories to help the user of camphoraceous oils ride out this emergency period. It's CAM-O-SASS M M & R, a scientifically manufactured product formulated as a "for the duration stop-gap" to replace OIL SASSAFRAS ARTIFICIAL and such widely used, but no longer obtainable Sassafras substitutes as FORM-O-SASS M M & R and SO-FRASS No. 3 M M & R, both recently discontinued because of raw material shortages.

Under present emergency conditions, CAM-O-SASS M M & R will be found acceptable and satisfactory as a perfume or deodorant for all technical products. It has a decided camphoraceous odor leaning towards the Sassafrassy type and provides *exceptional and lasting* coverage. Its price is less than one quarter current Oil Sassafras Artificial quotations . . . a saving that will go a long way to offset price increases of other ingredients.

A 1 lb. testing sample is available at the 100 lb. price of 60c per lb. so that you can give CAM-O-SASS M M & R a thorough testing.

Our technical experts will be happy to make suggestions for the best method of employing CAM-O-SASS. Write today.

* Apologies to Old Gold for borrowing their slogan line

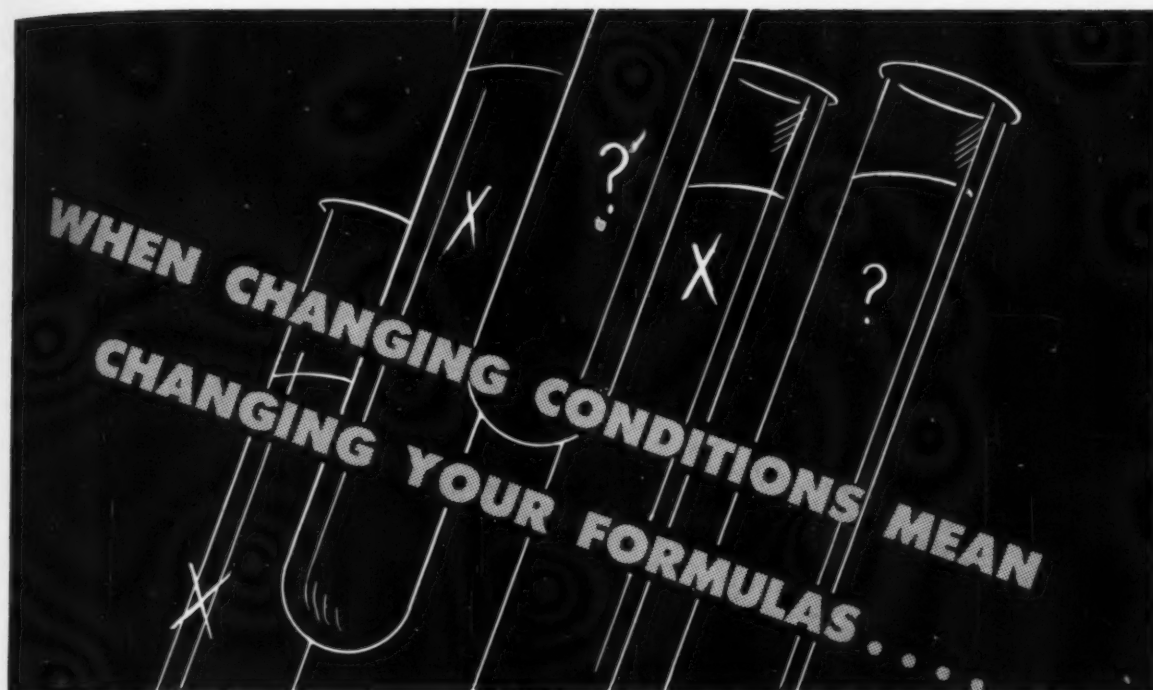


MAGNUS, MABEE & REYNARD, INC.

QUALITY ESSENTIAL OILS, BALSAMS, AROMATIC CHEMICALS, BASIC PERFUMES, FLAVORING MATERIALS . . . SINCE 1895

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STANDARD

Technical Service

CAN HELP YOU
MAINTAIN QUALITY
REDUCE COSTS
CONSERVE MATERIALS



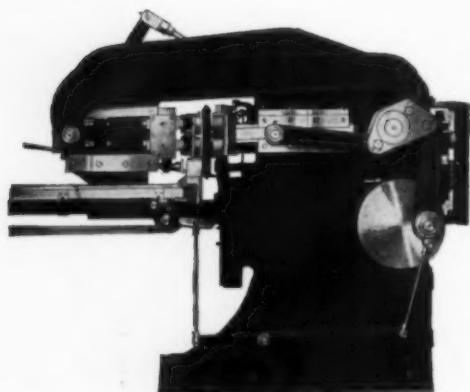
Working hand in hand with your operating men, STANDARD Technical Service helps you adapt your formulas and processes to today's changing conditions—maintaining quality, insuring production, reducing costs—and most important—*conserving materials!*

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Plants at CINCINNATI • JERSEY CITY
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JONES TOGGLE MOTION PRESSES



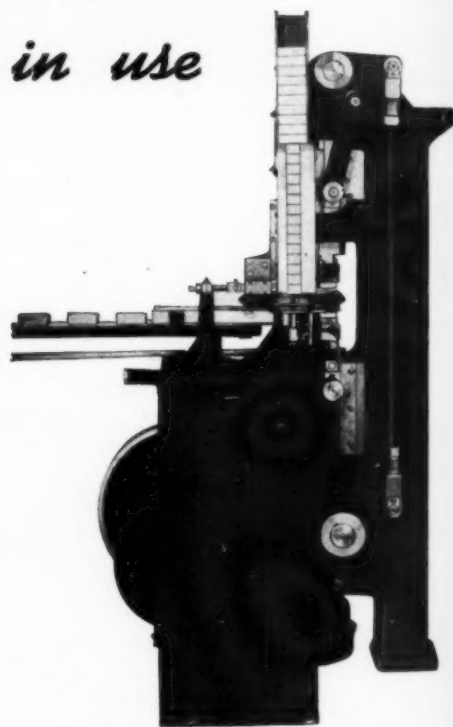
Type K Laundry Soap Toggle Press

*produce soap cakes
that do not crack
and break
up in use*

Soap cakes that are stamped, not pressed, that are formed by a sudden blow rather than a slow squeeze, are apt to crack in use.

The long slow squeeze of Jones Toggle presses gives soap stock time to coalesce into solid cakes that wear away in use without cracking.

Toggle presses also produce the finest possible finish and create a desire for possession never achieved by any other means.



Type ET Toilet Soap Toggle Press

R. A. JONES & COMPANY, Inc.
P. O. BOX 485

CINCINNATI, OHIO

The Standardized Constant Motion Cartoner packages, bottles, jars, tins, collapsible tubes and many other articles. It feeds, folds and inserts direction sheets and corrugated board liners with the loads.

AS THE

EDITOR

SEES IT

IN PRACTICALLY every popular brand of soap on the American market, there is represented a small fortune in money spent for advertising over a period of years. These investments in past advertising which run into the millions of dollars in some cases, will undoubtedly be protected by soap manufacturers as fully as possible in the present emergency. If, for example, in the growing shortage of coconut oil, preference must be shown by a manufacturer in allocating stocks among his brands with a view to protecting quality, it goes without saying that his most popular brands, those in which he has the greatest advertising investment, must and will receive first consideration.

In a situation of this sort, there has been some speculation as to what the attitude of manufacturers will be toward private soap brands which they produce for outside companies. The answer, we believe, is obvious. Manufacturers in this or any other emergency are going to look out for their own interests first. This means that if there is not enough coconut oil to go around, some private brand soaps may suffer very materially in quality or may possibly be forced off the market altogether.



RESTRICTIONS in the use of coconut, palm kernel, babassu and other high lauric acid oils, as had been expected, came late in March as the result of orders issued by the War Production Board. The plan behind these orders, General

Preference Orders M-59 and M-60, aims to conserve the present supply on all lauric acid oils in the country and to extend their use over as long a period as possible and in directions where they are most needed. There will undoubtedly be immediate and complete voluntary compliance within the soap industry. The order is for the good of the industry as well as that of the entire country.



DIRECTIONS for use on the average package of household soap are not too explicit, according to recent comment by a representative of a women's institute who has made a study of the subject. Following detailed instructions on the labels of various soap flakes, granules and powders, she obtained widely different detergent effects from products of similar composition. She concluded that not enough care is given by many soapers to compiling their directions for use and that better directions might make the application of some products more satisfactory. Instructions for use of soap products in domestic washing machines came in for the most direct criticism. The point was made that a majority of directions of this kind were now well behind the times, and that some products completely ignored the washing machine as an important medium of soap consumption. It is also interesting, although beside the point here, that this same com-

mentator laid most of the troubles encountered in washing colored goods of all kinds on the doorstep of the manufacturer and dyer of the fabrics and stated that the soaps used are seldom to blame.

Constant reviewing and correcting of labels and directions for use is no more amiss in soap products than it is anywhere else. Whether apparent or not, conditions are constantly changing, and the materials being washed are changing. Although the aforementioned criticism may not apply to any of your products, it is well to check up now and again, just to be sure.



THAT coconut oil might ever disappear permanently as an important raw material of the American soap industry is not easily conceivable to those who have watched its expanding use in the soap kettle over the past half century. For years, we have heard that there is no substitute for coconut oil in soap manufacture. But under the pressure of dire necessity, soapers are being forced to seek substitutes. There is no assurance, however, that any real substitute will be found, and if found, the chances of its development in a reasonably short time are remote. But it is altogether possible that the impetus given to a search for substitutes in the present emergency might eventually bring forth another oil or oils to challenge the place of coconut oil in soap manufacture.

Investigation of babassu oil by Government committees in South America at the present time might be the first step in developing a large tonnage competitor for coconut oil within the confines of the Western Hemisphere. Corozá oil from South America is still another substitute heralded with future possibilities, not to mention the development of other palm nut oils on that continent. Before this war is over, we are going to learn the bitter lesson of having to transport anything so vitally important to

soap manufacture as coconut oil half around the world to reach our factories. It may give to South America fatty oil production that incentive and financial backing which in the past has been lacking. That it might eventually end the shipment of coconut oil to the Western Hemisphere is quite conceivable.



FROM laboratory curiosities not so many years ago, pure fatty acids have become today important raw materials in the American soap kettle. Especially among the small and medium size soap manufacturers, the necessity for increased glycerine recovery as a war measure has brought fatty acids more widely into the soap industry picture. And with the promise of a continued adequate supply of a considerable number of pure fatty acids and combinations "tailored" to meet a variety of soap industry needs, they may present the solution to the problems of many a soaper in the not too-distant future.

Permitting a marked increase in speed and simplification of soap making operations, and closer quality control for the smaller manufacturer, their use also means maximum glycerine recovery. This latter factor is particularly important in the present situation, with the necessity of recovering every possible pound of glycerine to aid the war effort.

Advances in fat chemistry over the past decade have been truly great, and not the least of these have been revolutionary improvements in fatty acid production. That this has come at an opportune time goes without saying. That it is also a golden opportunity for fatty acid producers to win their place in the sun for years to come, is obvious. Any remaining prejudices which some soapers may have acquired in years gone by, are very likely by dint of necessity to be eliminated in the months to come if this has not already been accomplished.

In Place of COCONUT OIL

What can the soap maker do to retain some semblance of free lathering properties in the face of dwindling coconut supplies?

By C. R. Kemp

J. R. Watkins Company

WITH supplies of Philippine coconut oil cut off, future arrivals of palm oil questionable, and South American fats such as babassu oil and tallow depending upon a heavily burdened shipping, soap makers, especially the small and medium sized plants, are going to make some changes or else. At this writing there appears to be not too much time to make the changes.

Since time is the most important factor at the moment, a discussion of the possibilities of the development of some of the South American oil yielding nuts or of the development of synthetic fatty acids is not attempted. We must do something quickly with available materials. The problem of developing new sources of supply is important but time required may well be longer than our supply of coconut oil will last.

There can be no question about what should be done with coconut oil in formulae. Unless you have enough coconut oil on hand to take care of your requirements for a long, long time, and who has, the percentage should be cut at least 50 per cent, if you are to continue with your present volume of output. If you happen to be a manufacturer who would rather hold up some kind of a tradition and insist that your formula must not be changed, then you will continue to use the same

Approximate Constants of Soap Oils					
Oil or Fat	Sp. Gr. (Water at 15°)	Sap. No.	Iodine Value	Titer °C.	% Non-Sap.
Babassu Oil	0.869/100°	246—250	12—16	23°—25°	0.5%
Castor Oil	0.958—0.968	177—187	83—86	3°—	0.3—0.5%
Coconut Oil	0.926	251—263	8—10	20°—23°	0.2%
Corn Oil	0.921—0.927	186—193	120—130	15°—19°	1.5—3.0%
Cottonseed Oil ..	0.915—0.926	191—196	103—115	32°—38°	0.7—1.6%
Linseed Oil	0.931—0.938	189—196	170—204	19°—21°	0.5—1.6%
Olive Oil Foots .	0.914—0.919	189—195	79—86	17°—21°	2.0—3.0%
Palm Oil	0.921—0.925	196—205	48—58	42°—45°	0.7—1.0%
Palm Kernel Oil .	0.873/99°	244—255	16—23	20°—25°	0.2—0.5%
Peanut Oil	0.911—0.926	185—192	83—95	28°—30°	0.5—1.0%
Sesame Oil	0.920—0.926	188—193	103—115	21°—24°	1.0—1.8%
Soya Bean Oil ...	0.922—0.925	191—194	125—140	21°—24°	0.3—0.6%
Tallow (beef) ...	0.943—0.952	193—200	35—47	43°—45°	—
Whale Oil	0.922—0.926	188—194	110—150	22°—24°	1.0—3.0%

percentage in your formula and will. (a) ration out your product by filling your normal orders, supplying only 50 per cent, or (b) you will continue filling orders as usual, and take your chances.

After you have made your decision about stretching your present

supply it will be your urgent obligation to look around for something that may be a substitute. Ordinarily we think of babassu and palm kernel oils as substitutes for coconut oil due to their similar characteristics, but now we must look further. On December 31, 1941 the combined fac-

Fatty Acids in Soap Oils										
Glycerides of Acids	Coconut Oil	Corn Oil	Cottonseed Oil	Linseed Oil	Olive Oil	Palm Oil	Palm Kernel Oil	Peanut Oil	Sesame Oil	Soya Bean Oil
Arachidic	—	0.4	0.6	—	0.2	—	—	3.6	4.0	0.7
Lauric	45.0	—	—	—	—	—	50.0	—	—	—
Lignoceric	—	0.2	—	—	—	0.1	—	2.9	0.4	0.1
Linolenic	—	—	—	34.1	—	—	—	—	—	2.2
Linoleic	—	39.1	42.0	48.5	3.9	9.5	1.0	23.1	35.2	49.3
Myristic	20.0	—	0.4	—	Trace	0.6	16.0	—	—	2.0
Oleic	2.0	43.4	35.0	5.0	83.1	43.2	16.5	56.7	46.0	32.0
Palmitic	7.0	7.3	20.0	2.7	9.2	44.0	6.5	7.3	7.3	6.5
Palmitoleic	—	—	—	—	—	—	—	—	—	—
Stearic	5.0	3.3	2.0	5.4	2.0	2.9	1.0	5.5	4.4	4.2
Coconut Oil also contains 10% Capric, 2% Caproic, 9% Caprylic. Palm Kernel Oil contains 6% Capric, 3% Caprylic. Whale Oil contains 18% Clupandonic.										

tory and warehouse stocks of palm kernel oil and babassu oil amounted to less than one-thirteenth of the quantity of coconut oil. It should be remembered also that if you have not been a user of palm kernel and babassu oils you could not expect suppliers of these oils to take orders from new customers at the expense of his regular customers. Even if re-allocation were resorted to, the spread would be very thin.

A glance at the table given herewith will indicate that there is no hope of finding a natural substitute that will give the high available glycerol content found in coconut oil. Our substitute should have the property of producing a quick foamy lather. Again referring to the table we find cottonseed, soya bean and olive oils the most desirable, but olive oil is immediately out of the picture.

Large quantities of cottonseed, corn and soya bean oils are produced, but presently are used to a greater extent in edible and other products rather than in soap. Then, also, with coconut oil supplies cut off, manufacturers of edible products too are going to be seeking new sources of supply, just as the soap manufacturer is doing. These conditions might well create an extreme competitive situation. Of course with ceilings applied to these oils the cost angle can be regulated. However the question of distribution of these oils will certainly be important. Further examination of the qualities of these oils show that they produce rather soft soaps and that they have high iodine values. Both of these characteristics are undesirable.

It would seem that hydrogenation is indicated as a means of partially overcoming the objectionable characteristics. If we consider soya bean oil as characteristic of this class of oils we find that hydrogenated to iodine number of 60 to 70 it has been recommended as a substitute for beef tallow in the manufacture of hard soap. This would indicate that it may be advantageous to experi-

ment with this oil which has been partially hydrogenated, say to about 80 to 100 iodine number. The hardening which will occur is brought about by conversion of unsaturated glycerides into synthetic stearins. A desirable feature of hydrogenation is that its action is selective, combining with the more highly unsaturated glycerides first.

Of all the oils mentioned up to this point soya bean oil has one desirable characteristic not to be found in the others, in that it produces a soap that lathers well in hard waters. Although it contains no glycerides of lauric acid, it has been stated that the lathering power of sodium soaps of soya bean oil tested in water solutions containing two per cent of sodium chloride was very little affected. Lather was still produced in a 3.5 per cent solution.

SIMULTANEOUSLY with the cutting of the percentage of coconut oil in soap formulae, we are creating additional demand for a hard fat such as tallow for instance. While this does not create a problem as difficult as substituting for coconut oil, it should be given some thought. Here, perhaps, linseed oil could prove useful. If hydrogenated to the proper degree it could be used. While it could not be substituted 100 per cent for tallow it may serve a useful purpose say in amounts of 10 to 15 per cent. Hydrogenated fish oils have for quite some time been used in small quantities in soap formulae to replace tallow.

A recent article on rosin (W. D. Pohle, *Soap and Sanitary Chemicals*, February 1942) listed the principal fatty acids present in soap as caprylic, capric, lauric, myristic, palmitic, stearic and linolenic, depending upon the fats and oils used. It stated further that, comparison of sodium rosinate with soaps of individual fatty acids indicates that sodium rosinate resembles sodium laurate more than the soaps of the other fatty acids mentioned above and suggested that rosin might be used to replace part of the coconut oil used in soap products. Like the

author of that article I too think it unwise to suggest the exact ways and amounts of rosin to be used in soaps, because the procedure and percentage must be worked out to fit the ultimate product.

However it would be interesting to examine some ideas that are suggested by what has been said previously. Let us suppose for instance that we are manufacturing a toilet soap and have been using a soap made from let us say 75 per cent tallow, 25 per cent coconut oil. The first thing we do is to cut the percentage of coconut oil in half and then our soap is made from 87.5 per cent tallow, 12.5 per cent coconut oil. Will this change be noticed? Yes, but remember that there are going to be a lot of changes made that will be noticed. Surely the public remembers the changes made in motor cars during the final period before sales were stopped.

This last change in the toilet soap formula to 87.5 per cent tallow, 12.5 per cent coconut oil may tend to cause some trouble with cracking. If so we can use grease to replace a part of the tallow, for instance, 75 per cent tallow, 12.5 per cent grease, 12.5 per cent coconut oil. Now we have made our supply of coconut oil last twice as long as it would have. It will not do to stop with these changes because our supply of coconut oil may have to last a still longer time.

Up to this point we have simply a transitory set-up based on easily obtainable materials at not too much sacrifice in quality. From this point on it would appear that we must be guided by taking into account the physical and chemical characteristics of available fats and experimenting.

It would not be at all surprising if, by experiment we found that we could use some partially hydrogenated soya bean oil to replace a part of the coconut oil. It would appear that a soap made from 5 per cent partially hydrogenated soya bean oil, 7.5 per cent coconut oil, 12.5 per cent grease, 75.0 per

Soapmaking Properties of Oils and Fats

Soap Made From	Color	Consistency	Odor	Lather	Cleansing Properties	Action on Skin	Where Used	Glycerol 80% Available Per Cent	How Saponified
Coconut oil	Pale yellow to white	Extremely hard	Very slight of original oil	Quick, foamy, large bubbles. Does not last	Excellent	Biting action; roughens skin	Toilet and shaving soaps mixed with stearine	18.0	Quickly with evolution of heat
Palm kernel oil	Pale yellow to white	Extremely hard	Very slight of original oil	Quick, foamy, large bubbles. Does not last	Excellent	Biting action; roughens skin	Household, dry soap	18.0	Quickly with evolution of heat
Cotton seed oil	Buff to bright yellow	Medium to soft	Original oil	Quick, abundant, thick and greasy. Medium lasting	Good	Mild	Household, soap flakes, dry soap	13.0	Fairly easily
Soya bean oil	Pale yellow to dull white	Soft	Original oil	Abundant, greasy. Medium lasting	Fair	Mild	Household, soft soap	13.0	Fairly easily
Olive oil	Various shades of green	Very soft	Original oil	Abundant, close, greasy. Lather persists	Very Fair	Very mild	Household, toilets	13.0	Fairly easily
Skin greases	Dirty yellow to brown	Very soft	Offensive	Thick, greasy	Fair	Fair	Low-grade filled soaps	12.0	Easily
Tallow	Pale buff to white	Very hard	Scarcely perceptible	Slow, thick, lasting	Good	Very mild	Household, toilets	12.5	With difficulty
Bone grease	Pale yellow to dark brown	Hard	Slightly offensive	Slow, thick, lasting	Good	Mild	Household	12.5	With difficulty
Lard	White	Hard	Odorless	Fairly slow, close, lasting	Good	Very mild	Household	13.0	Fairly easily
Bleached palm oil	Buff	Very hard	Original oil	Medium to slow, close, lasting	Very good	Very mild	Household, toilet, dry soap	12.0	Very easily
Peanut oil	Buff	Very hard	Original oil	Very slow, close, lasting	Fair	Very mild	Household, shaving soaps	13.0	Difficult
Hardened whale oil	White	Exceptionally hard	Peculiar to hardened fats	Very slow, close, lasting	Fair	Very mild	Household	12.5	Very difficult
Hardened coconut oil	Pure white	Very hard	None	Quick, foamy, lasts longer than coconut oil	Good	Mild	Shaving soaps	18.0	Easily
Linseed oil	Golden yellow	Soft	Original oil	Greasy, thick, lasting	Good	Mild	Soft soaps	13.0	Fairly easily
Castor oil	Pale yellow	Soft	Slight original oil	Thick, greasy	Fair	Mild	Soft and hard soaps	12.5	Easily
Resin	Yellow to dark brown	Soft and sticky	Resin	Thin and greasy	Only fair	Mild	Household, toilet (small)	—	Very easily

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cent tallow would certainly be worth experimenting with. Similar experiments with cottonseed oil and corn oil may yield something worthy of consideration, but soya bean oil seems the most attractive on paper.

While experimenting, it will certainly pay to investigate the possibilities of rosin in our formula. The use of rosin in toilet soaps is nothing new to a number of manufacturers, as the better grades of rosin have been used in small percentages regularly. Incidentally, A.S.T.M. specifications for numerous soaps have just been revised to allow for inclusion of varying percentages of rosin.

When considering the use of rosin in a toilet soap formula, we are limited in the quantity that we can use due to the tendency of rosin to make the soap sticky. An acceptable soap may be found by using 86.5 per cent tallow, 10.0 per cent coconut oil, 3.5 per cent rosin. Continuing along this line there may be possibilities in a formula such as: 86.5 per cent tallow, 5.0 per cent coconut oil, 5.0 per cent partially hydrogenated soya, 3.5 per cent rosin. If an acceptable soap resulted from a formula such as this, then we

would have been able to reduce our coconut oil percentage to one-fifth of the original. Such reductions, if accomplished, plus, the fortunate arrival of small amounts of coconut oil, may be the answer.

However, if we should reach that point where coconut oil would not be available at all, then we could use soaps made from tallow and rosin or tallow, grease and soya bean oil. Other combinations of tallow with cottonseed or corn oil could also be used. It is true that they would not possess the qualities we now enjoy, but by rubbing a little longer and harder we can keep just as clean.

Why HOME-MADE SOAP?

A brief treatise on how and why Mrs. America can help Hitler and Japan by giving our glycerine production a kick in the pants . . .

HOME-MADE soap finds itself in the spotlight. Like an epidemic of measles in a country school, published advice on how to make soap at home and thereby win the war and save money all in one operation has swept across the country. Somewhat to the consternation of those working quietly and diligently to boost the glycerine output of the nation to take care of our war needs of this vital commodity, this make-your-soap-at-home thing was taken up by magazine and newspaper writers from coast to coast. They jumped on the idea with a will and, before anybody had a chance to think twice, the average housewife was in a fair way of being convinced that if she didn't make soap from her waste kitchen grease, she was next door to a fifth columnist and might even be suspected of having a grandfather still living in Tokyo.

For years soap has been made at home in the farm regions of America, and for years, this home-made soap has been a thorn in the side of soapers, more particularly small soapers in the middle-west and south who have been close to the picture and who are accordingly in a position to observe the extent of the practice. The opinion has been expressed by a considerable number of these small soapers that the soap industry as a whole does not ap-

preciate how extensive has been and still is the output of home-made soap. It has been estimated that there are still a million or more farm families who make soap at home regularly from kitchen grease and from by-product fat at hog-killing time, and that this amounts to many millions of pounds of soap every year. Some of it may run as high as ten per cent free fat or may contain enough excess alkali to take the hair off a brass monkey, but it is still classed as soap, used as soap, and replaces that much factory-made soap.

The problem of home-made soap from the angle of the soap industry has for years been principally a farm problem. Home soap making in the cities has never been too popular. But with the recent promulgation of advice from government departments telling how and why soap should be made at home,—especially the accent on wartime conservation of fats and soaps,—home soap making took on a definite patriotic tint. Now, it so happens that New York's swanky Park Avenue right at the moment leans strongly to things patriotic. Hence, it was not long before the style-setting matrons of Park Avenue were up to their elbows in home-made soap in their dinky two-by-four kitchens.

Almost overnight, home soap making became not only a patriotic duty, but likewise fashionable. And

this added impetus to the spread of the fad. These lovely ladies did not know anything at all about titre or sap numbers, but their enthusiasm was counted upon to make up for a lack of knowledge. Following printed directions with implicit faith, undoubtedly many of them managed to produce substances which might technically be classified as soaps.

Whether any of these stylish matrons ever used their own soaps is a horse of quite another color and really of no consequence, although it might have added a trifle of discouragement. What they did do,—and probably this was more important than the soap anyway,—was to break into the newspapers in a big way. Home-made soap was probably just the excuse, the vehicle if you will, for an opportunity to do something different along supposedly patriotic lines so that they might attract public attention and receive the plaudits of the multitude for “doing their bit” for their country in time of war.

So, when home-made soap became fashionable as well as patriotic, and threatened to spread farther and wider than ever, the War Production Board, cocking one eye in the direction of our glycerine output, thought it was about time to call a halt and set these misguided ladies on the right path. And then it was that the W.P.B. issued its statement that there will be plenty

by Preston Mack

of soap and home soap making is not patriotic but interferes with our glycerine production. This W.P.B. pronouncement was the first gun of the counter-attack in that gripping drama, "Is home-made soap patriotic, —or ain't it?"

O.P.A. Gets the Nod

JUST where did this mild make-your-soap-at-home stampede have its origin? As far as we can determine, the gold-plated doughnut for initiating the movement must go to the O.P.A. which is none other than the Office of Price Administration, that august body in Washington which is now having a sort of wrestling bout with the law of supply and demand,—which is putting price ceilings on this and that, and which has threatened to blow out the brains of Old Man Inflation, if he, Mr. Inflation, makes just one false move. The O.P.A. is headed by much-publicized Leon Henderson, the fellow who pedaled his secretary to work one morning on the handle-bars of his new-style bike, according to the movies, to show the country how to save rubber tires by not using our automobiles. Now, we can't get bikes.

At any rate, Mr. Henderson's O.P.A. started a big ballyhoo to save everything from soup to nuts. Evidently, one of his smart young publicity men thought that soap was a good subject for saving, and going further and possibly remembering his

own days back on the farm when his mother made soap, suggested making soap at home. If we were going to save tin, rubber, steel, wool, cotton, paper, and used bottle caps, why not soap? Off hand, he must have seen no answer to his question because the publicity boys received the nod and the campaign was on. Conserve soap! Save fats and grease and make it into soap at home! Fats and oils will be scarce, and soap will be scarcer!

The O.P.A. clarion call to save and make soap was taken up all over. Here was a household subject right up the alley of these lady columnists who specialize in writing about things of which they know little. In this paper and that magazine appeared articles on how to save soap and how to make it. Even the housekeeper of the White House in Washington where Mr. Roosevelt lives, spoke right up and said that they, the occupants of the presidential residence, would do their share in saving soap. What is more, they would make soap from waste grease at the White House and this home-made soap would be given to the White House help to carry

home. Although a suspicious mind might here detect something bordering on class distinction,—this business of giving the home-made soap to the servants,—it was probably nothing more than a direct and simple solution of what might have become a very complicated problem. If, perchance, a cake of this home-made soap by error found its way to the bath of some White House visiting dignitary, the effect might have been far-reaching. Imagine a fussy diplomatic guest finding a piece of crisp bacon protruding from his bath soap!

The Shooting Starts

AFTER the War Production Board published its formal protest against this make-your-soap-at-home idea, the column writers and others started to work themselves into a real lather. Some writers who had luckily missed the boat on the original home-made soap ballyhoo, saw an opportunity in taking a crack or two at the O.P.A.,—and they did. *Soap and Sanitary Chemicals* even went so far, according to the daily newspapers, as to recommend that it



would be far more patriotic to waste soap rather than conserve it so that more glycerine would be available for our war needs. This was paramount to sticking one's neck out about a mile and those with handy clubs did not hesitate to swing them. The answer came from several directions that to waste anything during this war is unpatriotic. The producer of Woodbury's soap suggested that "it has become a patriotic gesture to use toilet soap with a lavish hand." The Shopping News department of that rather unusual New York newspaper, *PM*, took a shot at this advice and urged its readers not to use soap or anything else lavishly these days.

The Civic Defense Committee of Chicago got mixed up in the argument, but they had been forewarned and avoided the mistakes of preceding advice givers. They told the housewives of Chicago to take their waste kitchen fat to the butcher so that he could turn it in with his fat trimmings to go to the renderer and eventually to the soap kettle. This piece of advice appeared to get by without anybody doing much in the way of criticizing. Of course, nobody interviewed the butchers and nothing is known of what they may or may not have said to the Chicago Civic Defense Committee on the quiet. Outwardly, the butchers maintained a dignified silence.

Two Iron Kettles Needed

WHEN the W.P.B. countermanded the advice of the O.P.A. to save soap and to make soap at home, the O.P.A. did not just take this lying down. The Consumer Division of the O.P.A. was quoted as standing by its original advice to conserve soap and not waste it. But the same newspaper writer who published this quotation went on to advise his readers, "... don't try to make soap at home. This way the glycerine content of the fats and greases is lost for our war needs." He did not add whether this was the subsequent conclusion of the O.P.A. or not.

And into the controversy came the publication *Bread and Butter*, put out by Consumers Union. This independent consumers' organ leaned to

the side of the W.P.B. and assured its readers that there was ample soap for all our needs and its production will not be curtailed. *Consumers' Guide*, a publication of the Consumers' Counsel Division of the Agricultural Marketing Service, Department of Agriculture, took a rather peculiar straddle on the red-hot topic of home-made soap. Displaying a photo of a housewife boiling soap in a white enameled dishpan on a stove, the caption read: "The time has not come when Americans are being asked to make soap at home, but some farm families find it a practical way to use up fats and oils that can't be eaten. The job isn't too hard for a city to do." Then, in the next column is a heading: "Here is a simple recipe for soap making." This goes on to tell how to weigh out 2½ pounds of fat and to heat it up until it melts in an iron kettle (aluminum will not do). Then, dissolve a small can of lye (5½ ounces of caustic soda) in 11 ounces of water in another iron kettle, and mix in and stir with a wooden paddle. Thus it goes until the soap is poured into a cardboard box and allowed to stand for 24 hours to harden, when it is cut up and put away for a week. The article then states: "You then have a hard laundry soap." There are those who might question this conclusion, but at this point, it is not important. But what is important, who has two iron kettles?

This article in *Consumers' Guide* where it says the time has not come to make soap at home and then goes on to give detailed information how to make it, calls to mind a newspaper article that appeared back in the giddy days of bath-tub gin. The

article in question gave full detailed information on how to make gin at home, closing with a warning that to make gin at home was illegal, but if it were legal, this is the way it should be done.

Oklahoma Does It Big

AS soap basked in the sunshine of wide newspaper publicity, as its conservation became the subject of feature articles in all sorts of publications, a number of interesting sidelights were reported. Most of them were humorous and indicated the usual lack of knowledge of the basic facts. For example, Mrs. Joseph E. Davies, wife of the former American ambassador to Russia (he wrote "Mission to Moscow," the best seller), was interviewed by a newspaper writer about Russia. Among other things she told about soap in Russia, especially the soap plant directed by the well-known Mme. Vyacheslaff Molotoff. Going through the plant, Mrs. Davies remarked that there was no "aging room." And then she went on to tell the writer: "You may not know that all soaps are aged for about seven years, in order to eliminate the lye. The Russians do this in the process of production." And the writer continued, "There are no soaps in Mrs. Davies' business—it is just one of those things she knows." But at least she didn't tell the American housewife how to make her own soap or the Russian secret of "eliminating the lye" without aging it for seven years. (Inventors of quick saponification methods please take warning.—Ed.).

At the Oklahoma A. & M. College at Stillwater, the wife of a professor of bacteriology, received much (Turn to Page 49)

PRIZE WINNING FORMULA

FROM the *Gulf Beach News*, published at St. Petersburg, Florida, we offer what is unquestionably the prize soap formula: "Since there may be a shortage of soap in the future, it is well to know a recipe for making soap. Use six pounds of grease (any kind) and strain. One-half cup of kerosene (acts as a softener); one-half cup sugar (makes the suds). Bring to a boil and pour into a pan. Cut into squares when hard." In our search for unique home-made soap formulas, we pronounce this one the all-time winner by a country mile!—The Author.

JAVA CITRONELLA OIL

PART III

By Dr. Ernest Guenther

FRITZSCHE BROTHERS, INC.

DURING the last 15 years or more the Java citronella industry has undergone profound changes, caused mainly by the tremendous expansion and by the catastrophically low prices during the world-wide depression of 1931. What changes we are now to see, following the Japanese conquest of Java, it is still too early to predict.

In the early days, almost all the oil used to be produced by a few large estates working under identical conditions of soil, altitude, climate, plant material, apparatus and methods of distillation. The abnormally low prices prevailing during the crisis did not permit the large estates to earn even their expenses in producing the oil, but to the small native growers who do not count their own or their families' labor, even the low prices remained attractive because other agricultural products were still less remunerative. Thousands of growers started to supply the grass to many new, small, native and Chinese distillers. It was grown on poor soil chosen because of cheapness, the good and expensive terrains being needed for rice. The grass was of inferior quality because often mixed with *lenabatu*, and it was planted at different altitudes with a different amount and distribution of rainfall and sunshine. The numerous new distillers competed keenly in the buying of grass, those paying the highest prices and accepting the worst quality receiving the most supplies. Distillation, too, was carried out less carefully and in all kinds of primitive stills. No wonder that the grass and also the oil underwent a continuous

lowering of quality. As a result, the constants of the oil lots no longer coincided with those indicated in the literature of 30 years ago.

Another disturbing factor, aside from outright adulteration, was the practice of mixing good and bad oils. Many newcomers, some of them characters of questionable integrity, went into the citronella oil business as intermediaries and speculators. Shrewd Chinese dealers, to whom citronella oil meant just another article of speculation, bought up the oil, mixed old and new lots and stored them for too long periods with increasing deterioration of the oil. All of this led to a constant lowering of the quality of Java citronella oil which had once enjoyed such a high reputation on the world market.

An increasing number of complaints from buyers abroad finally induced the exporters in Java to take

steps to end the unhealthy conditions, and at a meeting held by the Chamber of Commerce in Batavia, it was decided to subject the citronella trade to certain regulations. The result was the Standard Contract and the Arbitration Regulations of March 1, 1935 which have been revised several times since and adapted to changed conditions, the most important revision being that of April 1, 1938. Highly efficient administrators as the Dutch officials were, they not only set out most energetically to remedy existing abuses in the citronella oil trade but went much further and by practical supervision, advice and financial help to the native growers and distillers, combined with strict supervision of production, forced them to produce oils of high standards.

In order that the bulk of native plantings would meet the requirements of Contract "A" (85 per cent

An experimental growth of Java citronella grass at the government chemical research laboratory at Buitenzorg.



total geraniol and 35 per cent citronellal) it became necessary to raise the native sereh cultivation to a higher level by giving credit, advising about planting, and supplying selected plant material for propagation. In 1935 only about 20 per cent of the oil exported originated from estate grass and 80 per cent from native-grown grass which meant that special attention had to be paid to the native production. In the elaborate government laboratories in Buitenzorg, next to the world renowned botanical garden, the Netherlands administration, before the island of Java fell to the Japanese, carried out abstract and practical research on all of Java's products, and subjected each shipment of citronella oil to painstaking control. A large staff of highly qualified European chemists, botanists and biologists manned this remarkable institute which had no equal in the tropics.

It is not surprising that this efficient organization soon succeeded in reestablishing the former high standing and the reputation of Java citronella oil industry. One of the important functions of the laboratory's Essential Oil Board was to determine the requirements for the standard export qualities.

Contract "A" (standard contract of the Chamber of Commerce in Batavia) prescribed a total geraniol content of not less than 85 per cent and also not less than 35 per cent citronellal. When selling other qualities, the total geraniol percentage as well as that of citronellal had to be entered on the certificate.

Contract "B" required a minimum of 85 per cent total geraniol but no minimum in regard to citronellal.

Contract "C" permitted less than 85 per cent total geraniol with no minimum as to citronellal content.

Analyses carried out in the Buitenzorg Experimental Station also tested for the presence of adulterants like kerosene, mineral oil, and fatty oils. Only pure lots were cleared for export.

It is quite possible to detect outright adulteration by chemical means; but mixing of heterogeneous

oils, such as oils of high and low citronellal content or oils originating from the highlands and from the lowlands or old, speculative lots and new oils, too, is most detrimental to the quality of a lot and, unfortunately, such manipulations are difficult to check.

Analyses of Java Oil

FROM a commercial point of view, the two most important constituents of Java citronella oil are geraniol and citronellal. The quality of citronella oil may therefore best be judged by a determination of the acetyzable constituents and by a determination of the aldehyde content.

A. Citronellal

The official method of the Government Chemical Research Laboratory in Buitenzorg and the Trade Museum Laboratory of the Colonial Laboratory in Amsterdam is given below in detail. It is a modification of the well known oximation method which is frequently used in the analysis of essential oils:

Method

Into a 150 cc. flask, weigh accurately about 2 grams of Java citronella oil. Add 10 cc. of 95 per cent alcohol, 1 cc. of 0.1 per cent alcoholic bromphenol blue solution and neutralize with 0.1N potassium hydroxide. To this neutralized solution, add from a burette or an automatic

pipette 20 cc. of 0.5 N alcoholic potassium hydroxide and immediately afterwards, from a graduated cylinder, 20 cc. of a 5 per cent alcoholic hydroxylamine hydrochloride solution. Shake and allow to stand at room temperature for one hour (at the higher temperature in the Netherlands Indies, 15 minutes is quite sufficient). Titrate the excess of potassium hydroxide with 0.5 N hydrochloric acid (alcoholic) until the color of the indicator changes to a greenish yellow. The color should be compared with that of a blank determination made in the same way.

The result is calculated from the following formula:

$$\text{Percentage of citronella} = \frac{(b-a) \times n \times 15.4}{g}$$

Where b = volume of hydrochloric acid in cc. required for the blank determination, a = volume of hydrochloric acid in cc. required for the run, n = normality of the hydrochloric acid, and g = the weight of oil in grams.

The above method was described by P. A. Rowaan and D. R. Koolhaas.¹²

B. Total Geraniol

The percentage of free geraniol may be determined by the use of phthalic anhydride according to the method outlined in Gildemeister and Hoffmann's *Die Atherischen Ole*, Volume I, page 734 (third edition).

However, such a determination is seldom carried out except during the course of a scientific investiga-

A large staff of qualified chemists at the Buitenzorg Laboratory controlled quality of citronella oil shipments prior to the Japanese occupation of Java.



tion. A much more common and valuable figure is obtained by the determination of the so-called "total geraniol content" by means of acetylation.

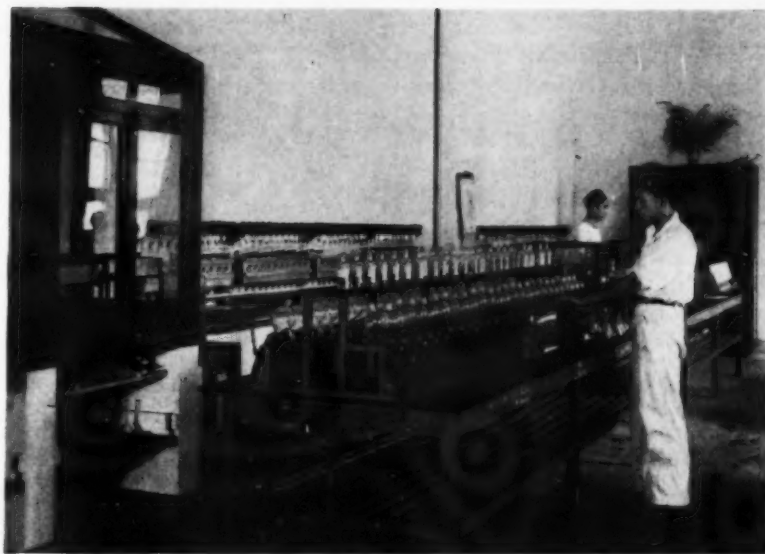
This value represents the percentage of all acetylatable constituents of the oil calculated as geraniol. In addition to the free geraniol, this figure also includes all other alcoholic bodies, free and esterified, and, in addition, citronellal, because this aldehyde is converted quantitatively into isopulegyl acetate under the conditions of the acetylation. If desired, an approximate figure for the percentage of actual geraniol may be obtained by subtracting the citronellal content (as determined above) from the total geraniol content. Since Java oils have been offered in the past on a basis of the total geraniol content, the exact determination of this analytical figure is of great importance.

The following method is officially used at the Government Laboratory in Buitenzorg:¹³

Method

Boil gently for 2 hours on an electric hot plate 10 cc. of oil, 10 cc. of colorless acetic anhydride (strength at least 95 per cent and free from mineral acids) and 2 grams of fused anhydrous sodium acetate. Care must be taken that the heating of the flasks is always uniform. Then 50 cc. of water are added and the flask is placed on a water bath for 20 minutes. The oil is separated from the acid, washed three times with 50 cc. of a 10 per cent solution of sodium chloride and dried by means of anhydrous sodium sulfate. 1.5 cc. of the dried and filtered oil are weighed accurately to the closest milligram, 2 cc. of alcohol added and a few drops of phenolphthalein solution, and the whole neutralized quickly with 0.1 N alcoholic potassium hydroxide until the red color just remains. To the neutralized oil are added 25 cc. 0.4 N alcoholic potassium hydroxide¹⁴ and some boiling chips, and the resulting mixture is boiled gently for one hour and a half over an open flame, the flask is then cooled quickly in water and the excess of potassium hydroxide immediately titrated back with 0.25 N sulfuric acid. From the saponification value of the acetylated oil thus obtained is calculated the content of total geraniol $C_{15}H_{26}O$, in the original oil. (See tables of Gildemeister and Hoffmann.)

Zimmerman stated that the degree of accuracy of this method is not



Analyses at the Buitenzorg Experimental Station gave a close check on use of adulterants and insured that only pure lots of oil were cleared for export.

greater than 3 per cent because of numerous factors, the most important being that the amount of alkali used during the saponification of the acetylated oil is not uniform.¹⁵ In an able criticism of this statement,¹⁶ Koolhaas has pointed out that the degree of accuracy is much greater than 3 per cent. He places the figure at 1 per cent for freshly distilled oils and 1.4 per cent for old oils. (The exact end point of the titration is more difficult to ascertain in an old oil because of the dark color of the saponified oil.) Moreover, Koolhaas maintains that discrepancies between check analyses are more apt to result from improper acetylation of an oil than from the subsequent saponification.

Under the system formerly followed in the Government Laboratories, each sample of oil was divided into two equal parts and the total geraniol content determined independently for each portion by different analysts. If the two analyses did not check within 1 per cent, the analyses were discarded.

At that time acetylation was carried out by heating the flask on a sand bath with a gas burner. Each flask was heated independently. The heating, therefore, did not prove to be very uniform or proportional.

According to Koolhaas, as a result of this uneven heating, a rejection of 25 per cent of the analyses was necessary. Later, the use of an electric hot plate was introduced by which 12 Kjeldahl flasks could be heated simultaneously to uniform and gentle boiling. The number of rejected duplicate analyses dropped to 4 per cent, and duplicate acetylations were no longer necessary on the same oil. However, two independent saponifications of each acetylated oil are still required to check within 1 per cent.

In the laboratories of Fritzsche Brothers, Inc. we have encountered no great discrepancy in duplicating analyses in spite of the use of open flame and sand bath for acetylation. However, this may be due to the fact that we employ the conventional type of acetylation flask with a ground-in air condenser, 100 centimeters in length, in place of the Kjeldahl type of flask used in Java.

Solubility

IN general, Java citronella oils are clearly soluble in 1 to 2 volumes of 80 per cent alcohol, further addition of the 80 per cent alcohol up to 10 volumes yielding a clear solution or a solution showing, at most, a slight opalescence.

Based upon this behavior, the Schimmel test was proposed in order to supply a rapid and convenient method of detecting adulteration with mineral oil fractions and fatty oils. As originally described for Ceylon oils, this test demanded that upon dilution with 10 volumes 80 per cent alcohol, a clear or faintly opalescent solution should be obtained. A heavy turbidity with the separation of oily droplets upon standing indicated an adulteration to the extent of about 10 per cent or more. A more stringent test was subsequently proposed which required the oil to pass this Schimmel test after an addition of 5 per cent petroleum had been made to the citronella oil in question.

Great caution, however, must be exercised in drawing conclusions based upon these tests. At the Government Chemical Research Laboratory, the Schimmel test is used only for preliminary examination of an oil. An oil that fails to pass this test is looked upon with suspicion but is not condemned as an adulterated oil without further investigation.

According to observations made by Hischmann during the course of many years, a poor solubility may also result from any of the following causes:

1. Admixture of weeds and other grasses to the distillation material because of improper cultivation or neglect of the fields.
2. The use of old grass plants having woody stalks. The coolies cut as low as possible in order to obtain greater weight, since these workers are paid on a basis of quantity of grass harvested.
3. The admixture of an inferior variety of citronella grass, difficult to distinguish from the good type.
4. Occasionally, the admixture of root material to the grass.
5. Improper storage of the grass before distillation. Too long a storage is detrimental, especially if fermentation has occurred. About 80 per cent of the oil produced is distilled by the low pressure process, which requires a longer period of distillation. Therefore, the natives prefer to wait for the grass to dry in order to save steam and fuel.
6. Improper distillation. The large producers, using compressed steam, often use excess pressure in order to obtain high yields. The small producers, using free steam, sometimes distill for too long a period.

7. Uncleanliness of distillation apparatus and storage tanks.

8. Improper storage of the distilled oil. After distillation, the oil is often permitted to stand unfiltered for weeks. Solubility of an oil decreases with age, especially if the oil is left exposed to the air.

9. General climatic conditions. Oils distilled during the last weeks of an exceptionally dry period and the first weeks of the rainy season are apt to show a poor solubility.

10. Soil conditions. This also may affect the solubility of the oil.

This same authority has made a careful investigation of more than 50 oils that were not soluble in 80 per cent alcohol. In only two cases could mineral oil fractions or fatty oil be detected, and in both cases the adulteration consisted of mere traces of these adulterants, caused by the use of unclean storage tanks and containers which had been used previously for other materials and which had not been properly cleansed.

In order to confirm a suspected adulteration with low boiling mineral oil fractions, the following test was developed by C. J. Van Hulssen and D. R. Koolhaas:¹⁷

Detection of Adulteration

ANALYSIS for the detection of adulteration with benzine is carried out in a special cylindrical vessel having a total content of 56 cc. This vessel is closed by a tightly fitting stopper, carrying a thermometer and provided with three holes, lying in a row, which may be closed by a sliding cover. The vessel is supported by an asbestos ring, the lower part hanging in an air bath.

In carrying out the determination, 35 cc. of the citronella oil are placed in the vessel and slowly heated. At intervals the lid covering the three holes is drawn aside and an attempt is made to ignite the gas by means of a small test flame (about 3 mm.) kept near the middle hole. The lowest temperature of the oil, at which the mixture of gases ignites to give a flash, is defined as the flash-point. For a normal citronella oil the flash-point is 84° C. (average of 2,000 determinations), whereas admixture of gasoline lowers the flash-point according to the following table.

% of gasoline in citronella oil	Flash-point (° C.) lower than
5	30
2	38
1	56
0.5	66
0.25	70

Oils with a flash-point below 75° C. are suspected of adulteration.

Zimmerman¹⁸ recommends the following procedure for the determination of petroleum oils:

The oil to be examined is distilled off slowly under reduced pressure (24-28 mm.) from a Widmer flask, and the fraction representing the first 10-15° C. of the boiling range is collected. In no case, however, is the temperature permitted to rise above 88-90° C. About 1 cc. of this distillate is shaken with a little concentrated sulfuric acid (2-3 cc.) in a small separating funnel of special design. After standing for a short interval (one-half hour), the petroleum separates out as a transparent layer on the surface. It is removed and the shaking with concentrated sulfuric acid repeated until the acid layer is only faintly yellow. The colorless, mobile petroleum residue is removed and its refractive index determined; it will be 1.42 to 1.45, while that of the polymerization product is at least 1.48.

In cases of adulteration with 4-5 per cent of petroleum, 25 cc. suffices for distillation. Where the proportion of adulterant is lower than this, 100 cc. of the oil are distilled as described and the first fraction obtained (some 8-10 cc.) is then re-fractionated from a smaller Widmer flask.

Adulteration with alcohol will, of course, improve the solubility of an oil. The test outlined below is used by the Chemical Research Laboratory of the Netherlands government to detect such adulteration:¹⁹

Shake for two minutes 2 cc. of citronella oil with one crystal of Fuchsin, treated as stated below. The oil must stay colorless with this treatment. The treated Fuchsin is prepared by shaking Fuchsin with pure, unadulterated citronella oil until no violet coloration is visible. In doubt-

(Turn to Page 69)

SOAP FAT USE

at new high level in 1941

Fat and Oil Consumption

By The American Soap Industry 1934-1941

Fats and Oils	1934 (1000 lb.)	1935 (1000 lb.)	1936 (1000 lb.)	1937 (1000 lb.)	1938 (1000 lb.)	1939 (1000 lb.)	1940 (1000 lb.)	1941 (1000 lb.)
Tallow	662,858	663,002	660,020	613,509	702,267	785,041	786,456	1,057,303
Coconut oil ..	341,124	229,711	307,376	252,241	342,982	388,912	396,857	484,124
Palm oil	154,704	87,311	78,453	141,358	91,642	102,146	84,934	129,871
Grease	142,782	98,086	98,714	94,247	96,356	120,856	256,886	310,487
Fish oils	64,548	109,970	128,044	123,879	79,874	114,961	88,661	69,423
Whale oils ...	33,996	28,440	32,603	65,130	66,080	51,522	19,250	6,889
Palm-kernel oil	16,516	37,173	26,443	111,514	29,498	3,657	197	1,113
Olive foots ...	30,411	31,507	23,965	17,984	15,013	19,068	14,958	10,029
Soybean oil...	1,354	2,549	5,023	10,274	10,897	11,177	17,612	24,737
Babassu oil ..	.....	.....	8,993	14,308	8,289	37,633	41,221	29,753

CONSUMPTION of fats and oils by the soap industry showed a tremendous increase during 1940, according to figures just released by the Bureau of Census, U. S. Department of Commerce, reaching a total of 2,143,857,000 pounds for the year. This represented an increase of approximately 25 per cent from the previous year's total of 1,722,634,000 pounds, and brought the industry consumption record to by far the highest level it has ever reached. The industry maintained its position as the primary factory consumer of animal and vegetable fats and oils, accounting for 36½ per cent of the total factory consumption of fats and oils which last year reached the record total of 5,860,742 lbs.

Of inedible tallow, the most important American soap stock, 1,057,303,000 lbs. found its way into the soap kettle in 1941, approximately 90 per cent of the entire 1941 industrial consumption, and an increase of 270,000,000 lbs. from the 1940 total.

Coconut oil continued to hold second place as a soap stock, its use in soaps amounting to 484,124,000 lbs. in 1941. This was approximately 87,000,000 lbs. greater than consumption figures for 1940.

Next most important item on the list for 1941 was grease, with consumption by the soap industry standing at 310,487,000 lbs., an increase of approximately 54,000,000 lbs. from the 1940 figure. Consumption of palm oil jumped from the 1940 total of 84,934,000 lbs. to a 1941 figure of 129,871,000 lbs. Fish oils reversed the normal trend, and in spite

of the tremendous increase last year in soap output, use of fish oils dropped from the 1940 total of 88,661,000 lbs. to a figure of 69,423,000 lbs. for 1941.

Use of soybean oil by the soap industry continued on the upgrade during 1941, with the yearly consumption reaching 24,737,000 lbs., a gain of approximately seven million pounds from the 1940 consumption of 17,612,000 lbs. Babassu oil, on the contrary, reversing its recent trend, was used in smaller volume by the soap industry in 1941 than in 1940.

(Turn to Page 67)

Oil and fat consumption at soap kettle up 25% in 1941...Tremendous gains in consumption of tallow, coconut oil, grease, soybean oil...soapers' use of fish oils, babassu and whale oil declines



New Products and

New gift package of Armour & Co., Chicago, a substantial travel case, contains an assortment of soaps, lotion, cream, cologne and powders. The Armour Travel Case, packed to brim, retails at \$3.60, complete.

A prize winner in the men's toiletries class of the All-American Package Competition, sponsored by Modern Packaging magazine and held last month at Grand Central Palace, New York, was this herringboned after shave set of McKesson & Robbins, Inc.



Gift sets for Mother's Day, currently being featured by Yardley & Co., New York, are attractively packed and banded with a special Mother's Day message. Both sets contain English Lavender soap, Lavender talc, and perfume. They retail at \$1.65 and \$2.00 each.

Packages



Nostalgic of ante-bellum days below the Mason-Dixon line is the new "Old South" line, distributed by Old South Perfumers, New York, which includes bath soap, talc, perfumery and cologne, all attractively packaged in old-fashioned boxes and bottles.

Lightfoot Schultz Co., New York, enters the bubble bath field with a novelty pound package offered in honeysuckle, apple blossom, gardenia and pine. The soap band accompanying the package serves as a scoop for measuring out the bubble-bath powder.

With the addition of the giant size, Haskins Brothers Soap Co., Omaha, now markets three sizes of "Spark" granulated soap, packaged in red, white and blue. The package was developed by Sidney Garfinkel Adv'g Agency, San Francisco.



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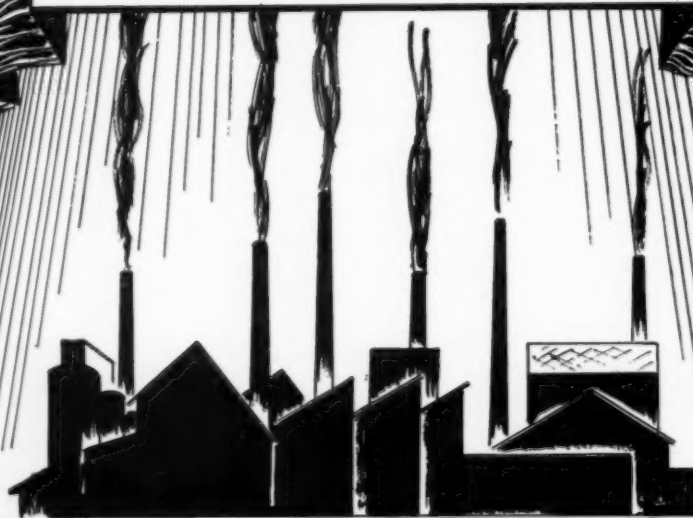


TURNER

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PERSULPHATE OF AMMONIA



JOSEPH TURNER & COMPANY

RIDGEFIELD, NEW JERSEY

83 Exchange Place, Providence

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NEWS

C. W. Lotte Dies

C. Walter Lotte, 47, who headed Lotte Chemical Co., Paterson, N. J., manufacturers of soaps and chemicals for the textile trade, died March 20 in Paterson General Hospital. Born in Paterson, Mr. Lotte received his B.A. degree from Bucknell University in 1914 and his M.A. degree in 1920. He served as a captain overseas during the first World War. From 1923 to 1930 Mr. Lotte was a member of the board of directors of the National Silk Dyeing Co. in Paterson, and also had been manager of the company's Dundee plant. He left the concern in 1930 to become president of Lotte Chemical Co. Three weeks before his death, Mr. Lotte had resigned as president of the Paterson City Board of Finance. Previously he had been a member of the City Board of Public Works and on several occasions was acting mayor.

OPA Begins Soap Price Studies

The Office of Price Administration is currently gathering data on soap prices since October 1, 1941. Letters have been sent to individual soap companies asking them to furnish the OPA with current price lists of all soap products manufactured, including all industrial and household soaps, cleaning agents and allied products, and for price lists as of October 1 and subsequent lists showing all price changes. The OPA has also requested soap companies to advise them before taking any steps to increase prices.

Forms Tesco Chemical Co.

T. E. Schneider, for many years sales manager of the chemicals division of International Minerals & Chemicals Corp., New York, recently resigned from the company following

his purchase of the detergents products division. Mr. Schneider's new company, known as Tesco Chemical



T. E. SCHNEIDER

Co., is now manufacturing a complete line of cleaning specialties, vegetable oil soaps, soap powder and disinfectants in its new Atlanta plant. The Tesco company also acts as distributor in the southeast for several allied products widely used in the textile field. International Minerals & Chemicals Corp., which was formerly International Agricultural Corp., has discontinued its soap and cleaning compound business entirely.

Mennen Drops 10-Cent Sizes

Mennen Co., Newark, N. J., has just discontinued manufacture of 10-cent sizes of its products for the duration of the war. The company advised the wholesale drug industry that its action was taken owing to "acute shortages and restrictions on certain raw materials and containers." While no formal announcements have been made by other companies, it has been reported that certain of them are planning to discontinue the 20- and 25-cent sizes.

WPB Revises Package Specs

The War Production Board recently issued a revised schedule of specifications for various types of folding boxes, including those used in packaging soap chips, flakes, granulated, powdered and sprayed soaps, washing powders, soap bars and shaving creams. The maximum calipers and weights of paperboard for cartons and packages are specified by the WPB, and consumers of folding boxes have been asked to follow the specifications on a voluntary basis to aid in the paper conservation program.

P-K Comes Under M-63

Under amendment No. 3 to general imports Order M-63, palm kernel oil and palm kernels were added to the list of strategic materials under strict control, which already included copra, coconut oil and palm oil. The amendment became effective March 14.

BIMS Set Golf Dates

Dates for the 1942 golf tournaments of the BIMS of New York, have just been announced as follows: May 14, Baltusrol Golf Club, Springfield, N. J.; June 23, Winged Foot Golf Club, Mamaroneck, N. Y.; July 28, Plandome Golf Club, Plandome, L. I., N. Y.; Sept. 22, Ridgewood Country Club, Ridgewood, N. J.

PQ Executive Dies

Lloyd B. Edgerton, vice-president of Philadelphia Quartz Co., Philadelphia, died March 15 at the Presbyterian Hospital, Philadelphia, after a long illness, aged 55. Mr. Edgerton entered the employ of Philadelphia Quartz in 1913 in charge of the engineering department, becoming a director in 1934 and vice-president in 1935.

Soaps at Chi. Beauty Show

Middlebrook & Lancaster, Inc., Brooklyn, N. Y., utilized the annual roundup of midwestern beauty shop operators at the Hotel Sherman, Chicago, March 1 to 7, for the first public showing of their new "Nutrine Ocean Foam" cream shampoo. The new product, attractively packaged in jars, featured the display of some of the company's 200 beauty preparations over which L. E. Macy, sales manager, presided.

Laco Products, Inc., Baltimore, showed their "Laco Hi-Lather" shampoo in two newly designed packages, one a one-pound waxed paper bag and the other a 10-pound metal canister. Because of the tin shortage, use of 5 and 10-pound packages and 25, 50 and 100 pound drums was discontinued last September, Frank Scarnavack, Chicago representative, stated. Since then, he said, the two smaller packages, now used exclusively, are being accorded ready acceptance. C. O. Young, sales manager, from the Baltimore office, and

Morris Fox, midwestern manager, were also in attendance.

Lightfoot, Schultz & Co., New York, showed a number of new novelty soap designs for re-sale in beauty shops, with Ben Atlas in charge. Easter themes were emphasized by rabbits and lambs and a vitamin appeal was offered in a carrot design in an "A-B-C Hungry Bunny" box. One heavy selling new item, Mr. Atlas said, is a picture block set, which uses gayly colored decalcomania pictures, guaranteed to outlast the soap.

Procter & Gamble Co., Cincinnati, staged their usual elaborate "beauty clinic" with eight hair stylists demonstrating use of the new professional concentrated "Dreen" shampoo. K. R. McKowen, general manager of the beauty shop division, superintended the affair for Procter & Gamble.

Other exhibitors included Conti, Inc., New York; Helene Curtis, Chicago; Gibbs & Co., Chicago; Boyer Laboratories, Chicago,

chief chemist of Lehn & Fink, and A. L. van Ameringen, president of van Ameringen-Haebler. The latter's address was read by Sidney Friend, secretary of the van Ameringen organization.

Leo Pasternak in Army

Leo Pasternak, well-known glycerine authority and chemical broker, president of the Leo Pasternak Co., New York, has been commissioned a major in the Ordnance Corps of the U. S. Army and has been stationed in Washington, D. C., since March 1. During the absence of Mr. Pasternak, Frederick Baum will direct the affairs of the company.

Soap Men Join OPA Staff

Edward Randa, formerly a soap chemist with Armour & Co., Chicago, and A. L. Iams, formerly with Procter & Gamble Co., Cincinnati, recently joined the staff of the Office of Price Administration to help maintain contact, during the war, with prices of products of the soap industry.

Sees No Serious Soap Shortage

No serious soap shortage need be feared, because of the availability of rosin to supplement soap stock, it was declared by Dr. Henry G. Knight, chief of the Bureau of Agricultural Chemistry and Engineering, U. S. Department of Agriculture, in an address March 25 at the Eighth Annual Chemurgic Conference in the Stevens Hotel, Chicago. Dr. Knight's reference to the soap situation was made in pointing out that naval stores research was among the timely projects carried on by the bureau in its research laboratories.

Soaps Win Package Awards

The "Swan Soap" package of Lever Brothers Co., Cambridge, Mass., "Ivory Snow" of Procter & Gamble Co., Cincinnati, the "Military Service Kit" of Mennen Co., Newark, N. J., and the "Linit Bath" package of Corn Products Refining Co., New York, received honorable mention as outstanding packages of 1941 in the packaging competition recently conducted by the American Management Association. Packages were judged on the basis of ten factors: buying information, display visibility, consumer convenience, production economy, beauty of design, merchandising ingenuity, use of color, construction ingenuity, use of materials, and use of typography or lettering. Top winner in the competition was the "Post-Tens" package of General Foods Corp. Presentation of awards is to be made at the Packaging Exposition, to be held at the Hotel Astor, New York, April 14 to 17.

Wrisley Adds Storage Space

Allen B. Wrisley Distributing Co., Chicago, has erected an addition to its West 65th Street plant, to provide storage space for soaps and toiletries formerly placed in public warehouses.

Dearborn Adds to Plant

Dearborn Chemical Co., water softeners, Chicago, has added two floors to its plant at 1029 W. 35th Street, to provide needed storage space.

Colgate Engineer Dies

Karl T. Krantz, engineer-in-chief of automatic machinery of Colgate-Palmolive-Peet Co., Jersey City, died March 4 at Orange (N. J.) Memorial Hospital. He was 58. A native of South Orange, N. J., he was graduated from Stevens Institute in 1903. He had been connected with Colgate for the past 32 years.

Marshall Field Soap Sale

Marshall Field & Co., Chicago, promoted a basement "Thrift Sale" of soaps and household cleaning agents of unusual proportions last month. Some 38 different items were offered including toilet and laundry soaps, detergents, scouring powders, water softeners, etc., packaged under 25 brand names.

Cosmetic Supplies Assured

American women were assured of an adequate supply of cosmetic preparations in talks before the cosmetic section of the Fashion Group in the Murray Hill Hotel, New York, March 4, by Dr. Emil Klarmann,

WPB Order Restricts Use of High Lauric Acid Oils

LONG expected orders from the War Production Board were issued March 20, applying drastic use and inventory controls to many of the most important soap oils. General Preference Order M-59 applies to palm oil and GPO M-60 covers coconut oil, babassu, palm kernel and other oils with a high lauric acid content. Order M-59 limits permitted use of palm oil after April 1 as follows:

- (1) manufacture of tin plate,terne plate, steel sheets, etc.
- (2) any manufacturing process in which glycerine is produced where the amount of glycerine remaining in the product does not exceed 1.5 per cent.

Another section of the order imposes an inventory control which requires that any firm holding more than 30,000 pounds of palm oil before the issuance of the order be required to set aside and hold subject to the direction of the Director of Industry Operations 20 per cent of the total amount. Holders of palm oil must make full reports of their palm oil inventories to the WPB by April 15 on Form PD-355.

The order affecting the high lauric acid content oils is a little more complex. It stopped at once the use of coconut oil, babassu, palm kernel, and other high lauric acid content oils in the manufacture of margarine, shortening or cooking fat. It further prohibited any use of such oils which does not result in production of glycerine, or in which the amount of glycerine left in the resulting product is in excess of 1.5 per cent on an anhydrous soap basis. This particular provision of the order, incidentally, does not go into full effect until June 1. During April and May, users of such oils are permitted to continue processing them on their present basis in an amount equal to 50 per cent of average 1941 monthly use.

Even in the case of soap makers recovering the required amount of glycerine from such oils, other con-

trols are applied by M-60. Beginning with the month of March, the order provided that no processor might saponify more than 75 per cent of his average monthly use of these oils or fatty acids derived from them. As a corollary to this provision, an inventory control measure was also ordered. It provided that any person or firm having an inventory on the day before issuance of the order of more than 30,000 pounds of high lauric acid oil, must set aside and hold subject to the direction of the Director of Industry Operations, 25 per cent of such inventory. It was ordered that reports of such inventories be submitted to the WPB by April 15 on Form PD-354.

Claims Big Soap Waste

The outlook in the oil and fat market, with particular attention to the soap maker's stake in the future picture, is discussed in the April issue of *Fortune* magazine. Talk of using increased quantities of fats and oils in the soap kettle over the coming year, to provide the needed increase in glycerine production is dismissed as a "soap man's dream." The glycerine problem will be solved, *Fortune* predicts, by decreasing non-war use

SOUTH AMERICAN FAT SOURCES

United States is turning to South America as a source of soap making fats and oils to take the place of Philippine coconut and Sumatran palm oil. A government commission is now in South America surveying Brazilian babassu and Argentine tallow production. Upon its return findings will be reported to the soap industry through the pages of SOAP AND SANITARY CHEMICALS.

rather than by further increasing production.

Says *Fortune*, "we shall probably need all the edible fats we can produce and shall wish we had more; and soap makers cannot be allowed to help themselves. By the end of the year, indeed, it may be necessary to deprive them of the 150 or more million pounds of cottonseed, soybean, and other edible oils they ordinarily consume. Which leaves linseed oil from Argentine flax between them and soap rationing."

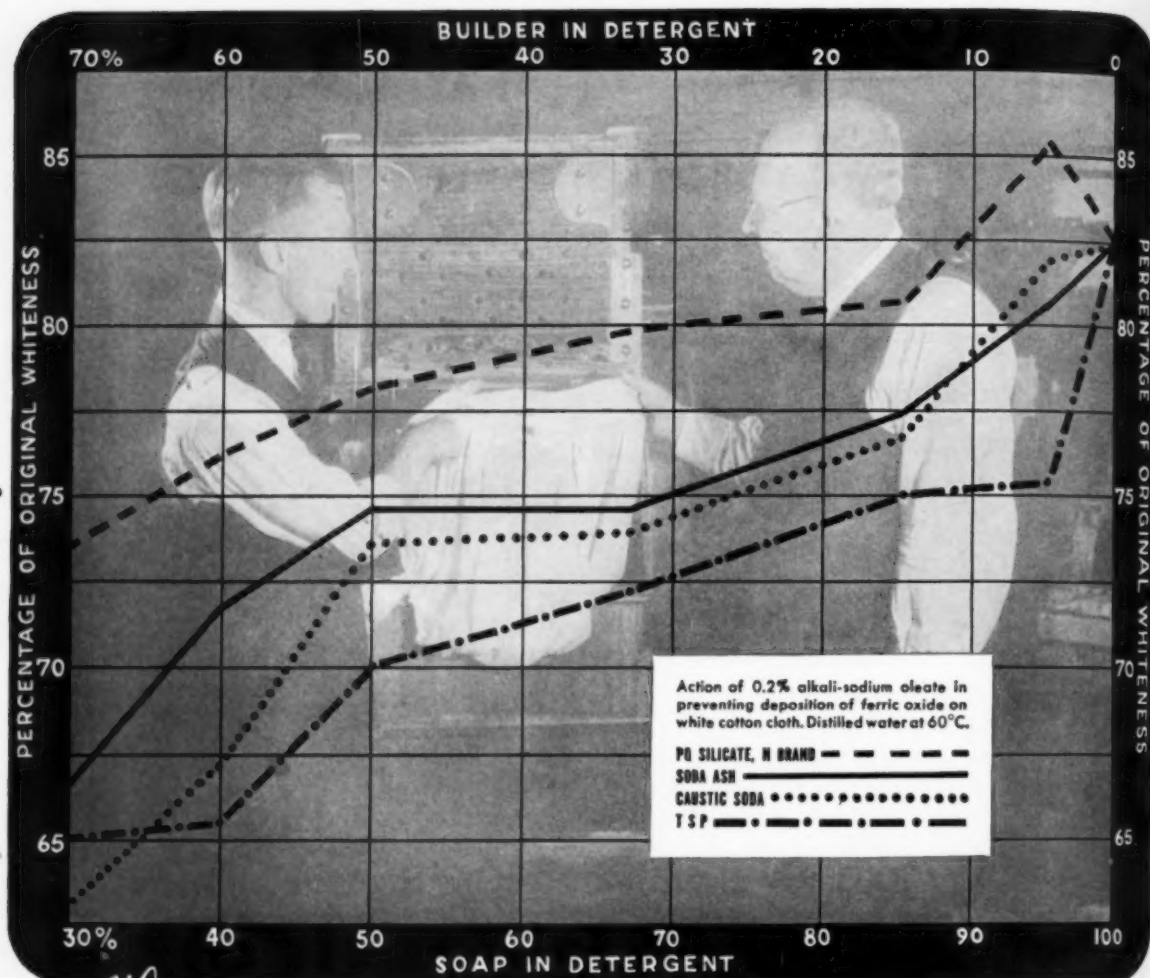
In the face of this situation, *Fortune* advocates inauguration of a soap conservation program immediately. Say the editors, "In consuming 60 per cent of the world's soap, (Isn't this a little on the high side? Ed. note.) the U. S. wastes immense quantities of it. Big factors in the waste are liquid—and powdered-soap dispensers, which should be replaced for the duration by individual cakes carried by workers. Washing soda should replace soap flakes and powders for dishes. Industry, public kitchens and restaurants might use detergents, the synthetic non-fat soaps. (Refer this one to the A.S.T.M. definitions committee. Ed. Note.) As high as 800 million pounds of fat can be saved by incorporating more fillers like borax and washing soda into cake soap."

Delay 1942 AATCC Convention

Plans are now under way for the 1942 annual meeting of the American Association of Textile Chemists and Colorists, which is to be held late this year, the date and place not having been set definitely. There is a possibility that Atlantic City will be selected. Chairman of the technical program committee for the meeting is K. H. Barnard, of Pacific Mills.

Brillo Income Rises

Net earnings of Brillo Manufacturing Co., New York, for 1941 were recently reported as \$298,679, equal to \$2.23 a share of common stock. This compares to 1940 income of \$245,517, equal to \$1.40 a common share.



*How SiO_2
Aids Cleaning—*

PQ Silicates Banish Removed Dirt

DIRT REMOVAL, as you know, is a two-fold operation—first, taking the dirt out and second, preventing the dirt from re-affixing itself to the clean object. PQ Silicates provide soaps and detergents with a higher efficiency in both functions. Thus cleaner fabrics and surfaces result when PQ Silicates are used as builders.

Every soap manufacturer knows that pure soap, while it is effective in preventing soil

redeposition, it lacks certain other qualities and is costly. For superior protection against soil deposition, choose the right alkali. (See chart above.) Sodium oleate (0.2%) alone protects cloth to the extent of 82.5% of original whiteness. But 95 parts soap plus 5 parts sodium silicate give even better results, 85.5% whiteness. The silica content of the silicate aids in producing whiter whites and brighter colors. May we discuss the role of silica in your products?



PHILADELPHIA QUARTZ CO.

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125 S. THIRD STREET, PHILA., PA.

Release New Specifications

The following new Federal specifications have recently been approved by the U. S. director of procurement, to become effective July 15, 1942: Chip Soap, P-S-566a, superseding P-S-566; Cake Grit Soap, P-S-571a, superseding P-S-571; Ordinary Laundry Bar Soap, P-S-591a, superseding P-S-591; Powdered Laundry Soap, P-S-596a, superseding P-S-596; Soap Powder, P-S-606a, superseding P-S-606; Salt-Water Soap, P-S-611a, superseding P-S-611; Liquid Toilet Soap, P-S-618a, superseding P-S-618; Milled Toilet Soap, P-S-621a, superseding P-S-621; Powdered Toilet Soap for Dispensers, P-S-626a, superseding P-S-626; Scouring Powder for Glass, P-P-596a, superseding P-P-596. Reviews of the essential requirements of these new specifications, as well as other specifications covering soaps, detergents, chemical specialties, floor products, and the like, completely revised and brought up-to-date, are covered in the new 1942 *Blue Book*.

New Hercules Wetting Agent

A new wetting and emulsifying agent, "Dresinate," for use in conjunction with alkaline cleaners, has just been developed by the research department of Hercules Powder Co., Wilmington, Del., it was announced recently. In finely divided powder form, the new product is said to be available in practically unlimited quantities,—at a lower cost than the common emulsifying agents used by the metal cleaning industry. It is suggested for use with T.S.P., sodium metasilicate, caustic soda, soda ash, borax, and other alkaline detergents.

Francis D. Dodge Dies

Francis D. Dodge, chief chemist and research scientist for 50 years with Dodge & Olcott Co., New York, essential oils and insecticide raw materials, died suddenly on March 15 of a heart ailment. Dr. Dodge became ill while attending the banquet, March 12, of the Drug, Chemical and Allied Trades Section of the New York Board of Trade. Dr. Dodge was born in Washington, D. C., the grandson of Richard J. Dodge, who

was at one time a partner in the firm of Dodge & Olcott. At an early age, Dr. Dodge moved to Brooklyn. He attended Brooklyn Polytechnic Insti-



DR. FRANCIS D. DODGE

tute, and later entered Columbia University, School of Mines, at the age of sixteen. He was graduated from Columbia in 1888, and remained there as an assistant in organic chemistry in the School of Mines for two years. In 1890, he received his Ph. D. from Columbia, and then traveled to Europe, continuing his studies in chemistry at the University of Heidelberg, where he remained for a little more than a year. It was in 1891 that he returned to the United States and shortly after entered the employ of Dodge & Olcott.

Among his many achievements was the isolation of citral from lemongrass, Dr. Dodge being the first to accomplish this. He was a member of the Chemists Club, New York, and also a member of the A.A.A.S., the A.C.S., and Sigma Xi.

Limit Glycerine Deliveries

Glycerine distribution was placed under strict allocation control by WPB Order M-58, issued March 30, effective immediately. After May 1, deliveries of glycerine in excess of 50 pounds in a month may be made only when authorized by the WPB. The order prohibits use of glycerine in the manufacture of anti-freeze. Beginning with April, other non-essential uses of glycerine in any month are cut to 70 per cent of the average monthly use in 1940.

Barron's Sees Ample Soap

A resume of the future of soap supplies for the housewife, appearing in the March 16 issue of *Barron's Financial Weekly*, provides an answer to the question: Will the consumer be able to buy all the soap he needs in the future? States *Barron's*, "The housewife wouldn't hoard soap if she knew that all government efforts have the same ultimate aim in view: more soap. The need for glycerine is where the housewife and the fat collection campaign come in. Defense conservation officials don't want housewives to make their own soaps."

After reviewing the loss of lauric acid bearing oils because of the war, *Barron's* continues, "loss of coconut oil would not necessarily mean a corresponding decline in over-all soap production, provided domestic crops are sufficiently expanded and made available. However, it does mean a loss in quick lathering qualities of soap. Hydrogenation of such vegetable oils as soybean and linseed, to obtain lauric acid, has not been successful because their potential value to soap has been lost in the process. Synthetic production of lauric acid, from petroleum hydrocarbons, has been accomplished by one big soap-maker. However, it is not economical in the light of present market conditions, and there are other obstacles to its being launched commercially now. It appears, therefore, that unless natural oils of the coconut type can be obtained, future soap will contain less and less coconut oil, and ultimately none."

Lueders Direct Salvage Camp'n

George Lueders & Co., New York, have been named by Clarence H. Low, Chairman of the New York City Salvage Committee operating under the War Production Board, to organize salvage operations in the essential oil and aromatic chemicals field. Kenneth W. Merkel of the Lueders Company is serving as chairman of the Salvage Committee, and is currently drawing up a program for the salvage of paper, tin, rubber, etc. to be bulletined to the essential oil industry.

U.S.I. ALCOHOL NEWS

April



A Monthly Review of Technical Developments for Chemists and Executives



1942

New Formula 40-A Is Authorized by Alcohol Tax Unit

Modification also Announced
For S.D. Alcohol Formula 27-B

Further relief for the users of S.D. Alcohol during the current shortage of certain denaturants is provided by recent rulings issued by the Alcohol Tax Unit.

In view of the difficulty of obtaining S.D. 40, a new formula, S.D. 40-A, has been authorized. Composition of this formula calls for the addition of the following to every 100 gallons of ethyl alcohol of not less than 190 proof:

5 pounds sucrose octa-acetate and
3/4 gallon denaturing grade tertiary
butyl alcohol.

Sucrose octa-acetate is an organic acetylation product, commercially available as a cream-colored, non-hydroscopic powder, with an intensely bitter taste.

Because of the shortage of Oil of Lavender



Tincture of green soap, frequently recommended by physicians for persons allergic to ordinary soaps, is one of the major uses of S.D. 27-B.

Flowers, a modification has been authorized in the composition of S.D. 27-B. Modified composition calls for the addition of the following to every 100 gallons of ethyl alcohol of not less than 190 proof:

1 gallon Oil Lavender Flowers U.S.P. or
1 gallon Oil Cedar Leaf U.S.P., and
100 pounds soft soap U.S.P.

This supplements the announcement in the March issue of U.S.I. ALCOHOL NEWS that permittees might substitute Oil of Cedar Leaf for Oil of Lavender Flowers by filing Forms 1479-A.

Oil of Cedar Leaf is a colorless or yellow liquid, having the characteristic odor of Arbor Vitae.

U.S.I. Products Find Many Uses in Manufacture of Pharmaceuticals

Amyl Alcohol, Ethyl Acetoacetate, Ethyl Ethanedioate,
Other Chemicals Employed in Many Essential Applications

With the nation's wartime effort resulting in an increased demand for many types of pharmaceuticals, a number of the chemicals produced by U.S.I. are taking on greater importance in pharmaceutical manufacture.

Amyl alcohol and fusel oil, refined, for example, are used as sources of the amyl group in the manufacture of such products as amyl nitrite and amyl barbitol, as well as in compounding and dispensing.

Ethyl acetoacetate is employed as an intermediate in the manufacture of antipyrine and amidopyrine. Other potential applications of this chemical in organic synthesis are suggested by two of its properties: the reactivity of the hydrogen on the carbon adjacent to the $\text{—COOC}_2\text{H}_5$ group; and the tendency of addition products to close into ring structures of the most varied types.

Ethyl ethanedioate (ethyl oxalate) is used in the manufacture of phenobarbital. Ethyl carbonate is also used in the manufacture of this pharmaceutical, where, as the first step, it is reacted with benzyl cyanide to give ethyl alpha-cyano-phenylacetate. Ethyl carbonate also reacts with ethyl acetate to give ethyl malonate, starting point in the manufacture of luminal, barbitol, and veronal.

Urethan has a number of interesting applications in pharmaceuticals. It is used in the treatment of insomnia, eclampsia, nervous excitement, tetanus, convulsions and spasmodic conditions, and whooping cough, and as an antidote in strychnine, resorcinol, and picrotoxin poisoning.

Ethyl formate is employed in liquid form as a remedy for diarrhea, in vapor form as an inhalant for respiratory affections, and externally as a rubefacient. A further application is its reaction with ethyl beta-ethoxypropionate to give ethyl alpha-formyl-beta-ethoxypropionate, an intermediate in the synthesis of Vitamin B₁.

Ethyl acetate is used in the synthesis of pharmaceuticals and in purification. Ethyl acetate is produced by U.S.I. in four grades: 85-88%, 95-98%, 99%, and U.S.P.

Ethyl sodium oxalacetate has a wide range of utility as an intermediate in the synthesis of pharmaceuticals. A special advantage of this chemical is its high stability, compared with oxalacetic ester, which is relatively unstable. Ethyl sodium oxalacetate is entirely suitable for most applications in which oxalacetic ester might be employed.

Other U.S.I. products employed in pharmaceuticals include collodion, U.S.P. and U.S.P. Flexible; and acetone, used in making chloroform and iodoform.

TECHNICAL DEVELOPMENTS

Further information on these items
may be obtained by writing to U.S.I.

Oil of heps, formerly produced only in Europe, is now reported available from a domestic source. The oil is described as having a distinctive fragrance. (No. 560a)

A new sweetening agent can be used in conjunction with saccharin with a resulting increase in sweetness and saving in cost, it has been announced. Material is a white crystalline powder, soluble to the extent of 1:800 in cold water, 1:50 in boiling water, 1:25 in alcohol, and can be used in dentifrices, pharmaceuticals, and flavors, according to the maker. (No. 561a)

A new substitute for gum tragacanth ribbon is said to give the same viscosity and body in water. Maker says that it is a pure white, edible protein powder, which can be used in pharmaceuticals, dentifrices, and cosmetics. (No. 562a)

A decalcomania process permits the application of multicolored designs on glass containers, it is reported. Design is said to be fired directly into the glass, and to permit use of any number of colors over the same area in order to obtain blended effects. (No. 563a)

An apple blossom note characterizes a new synthetic, which the maker describes as suitable for use in perfumes, creams, powders, and other cosmetic products. (No. 564a)

A new metal alloy for use in manufacturing collapsible tubes is said to be suitable for packaging of tooth paste, shaving cream, cosmetics, and other products of this nature. Supply of the alloy is currently limited, but maker hopes to expand production in the future. (No. 565a)



Rigid care is exercised by U.S.I. to maintain the high degree of purity necessary in chemicals used for pharmaceuticals. (See article at right.) This conductivity test provides valuable information on purity of chemicals.

U.S.I. INDUSTRIAL CHEMICALS, INC.

60 EAST 42ND STREET, NEW YORK



BRANCHES IN ALL PRINCIPAL CITIES

Coconut Shortage Forces Revision in Soap Specs.

NEW alternate emergency provisions, modifying existing specifications for soaps and detergents, have been adopted by Committee D-12 of the American Society for Testing Materials. They were passed on by members of the committee at the annual meeting held March 9 and 10 at the Hotel New Yorker, New York City. Meeting in a two-day session, the committee re-elected H. P. Trevithick of the New York Produce Exchange Laboratory as its chairman for the coming year, with F. W. Smither of the U. S. Bureau of Standards as vice-chairman and B. S. Van Zile of Colgate-Palmolive-Peet Co. as secretary. The only change in the personnel of the Advisory Committee is the election of C. C. Zeigler of Swift & Co. to succeed R. E. Devine of Hooker Electrochemical Co., who has retired from business.

All soap specifications are modified for the duration of the war by the addition of the following requirement: "This soap must be manufactured in conformity with the regulations of WPB, with reference to content of glycerine, fat stocks, etc., anything in these specifications to the contrary notwithstanding." (The WPB has already issued orders M-59 and M-60 restricting use of coconut oil, palm oil, palm kernel oil, babassu oil and other high lauric acid content oils in soap, prohibiting use of such oils in soaps where glycerine is not recovered, or in which a glycerine content in excess of 1.5% is retained. See article on page 37.)

In addition to the above, to meet the demands of the present emergency, particularly the shortage of stocks of coconut oil for the soap kettle, modified alternate specifications have been adopted to apply for the duration of the war where the regular specifications cannot be car-

ried out. The emergency specifications will aid in the conservation of critical materials and will serve to expedite procurement, while not affecting the long-term work of the committee in perfecting the normal specifications on which it has been working for several years past.

Reporting for the Committee on Straight Soaps, I. Katz of Manhattan Soap Co., New York, recommended a change in the present specification for Milled Toilet Soap to allow for the inclusion of up to 10 per cent of rosin. The present specification provides that no rosin be present.

On Chip Soap he recommended that the present specification be liberalized to allow for the inclusion of a maximum of 20 per cent of rosin. As a result of this change the previous titer specification of 39 will have to be eliminated and no titer figure specified. The same 20 per cent rosin maximum and elimination of titer provision applies also in the case of Powdered Soap.

On White Floating Toilet Soap the emergency specification eliminates the phrase "no rosin"—allowing a maximum of 10 per cent. The present acid number provision is stricken out, as is the word "white."

The new alternate emergency specification on Olive Oil Solid Soap eliminates insistence on "olive" oil as the raw material, and also strikes out the minimum titer requirement of 16 (the present allowable range being 16-26). On Olive Oil Chip Soap reference to "olive" oil and minimum titer are also eliminated. Specifications for Palm Oil Chip Soap and Palm Oil Solid Soap are replaced by Tallow Chip Soap for the duration of the war.

Reporting for the Committee on Built Soaps, Fred Krassner of

U. S. Navy Clothing Depot, reported detailed progress on work being conducted in the writing of an emergency alternate specification on Salt Water Soaps. The Navy Department is much concerned with the problem of development of a non-coconut oil soap which can be counted on to lather freely in salt water (the present specification provides for an all coconut oil soap). A number of soap manufacturers have agreed to work on this development problem and will submit samples to the Navy Department for test at an early date. Whichever product is most satisfactory will be used for writing specifications.

Mr. Krassner also reported that the Built Soap Powder specification will be modified to provide for a new fourth class of product in which 10 per cent of rosin would be permissible in the finished soap. This change in the specification would also make it necessary to eliminate the previous titer requirement.

The Committee on Definitions reported one new definition and several modifications of previous definitions. The new definition is for Detergency and reads as follows: "effectiveness of soil removal." A revised definition for Detergent is "any compound or mixture which cleans."

The most important item in the report of the Committee on Analysis of Soaps was a method for the determination of tetra sodium pyrophosphate in soaps.

According to present plans the committee will not meet again this year, although should developments indicate the desirability of a second 1942 meeting, the membership may be polled on the subject in the fall.

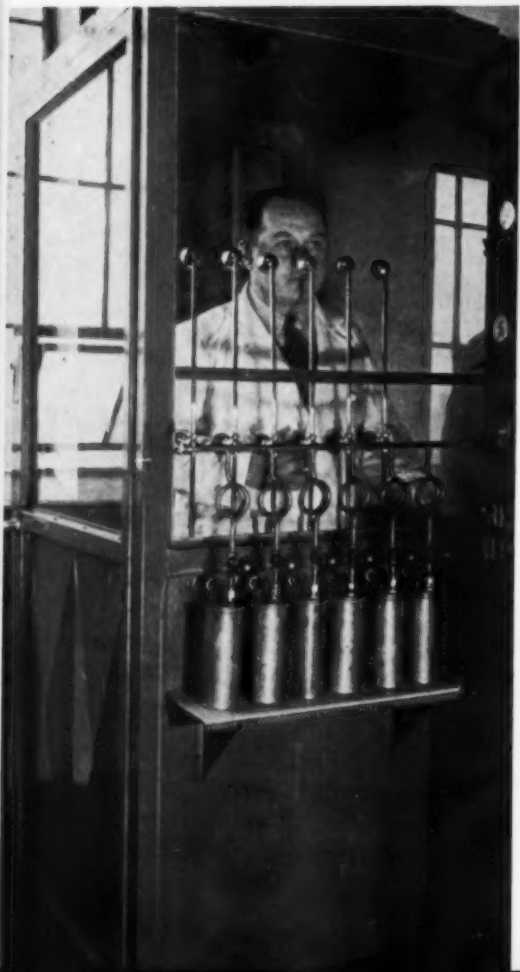
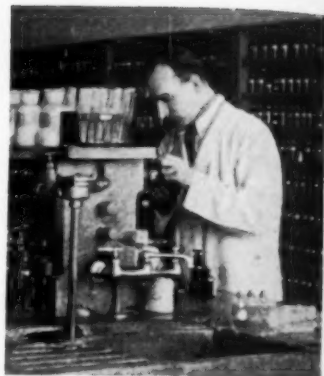
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At the March 26th meeting held in the Club Lounge of the Palmer House, the Chicago Drug and Chemical Association elected the following as officers for 1942: president, M. F. Charley; vice-president, J. P. Sullivan; secretary, G. F. Pauley; treasurer, F. D. Hildebrandt. Four new directors, J. A. Gauer, T. W. Golden, W. H. Jelly and J. J. Walsh, were elected for two year terms.

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OUR Perfume Division is one of the most highly specialized departments in our entire organization. Normally, its work involves the use of—and demands an intimate knowledge of—hundreds of complex, aromatic substances. Long training and experience, rare acuteness of smell, and the uncanny ability to combine these materials into pleasing harmonies of fragrance, are minimum requirements for the personnel of this division.

Today, restricted raw materials impose a greater burden than ever upon these perfumers, and it is a credit to their ingenuity and fine skill that they are still able to create odor blends of compelling character from shelves long since depleted of many of their most useful ingredients.



This smelling booth is an important aid in testing and comparing perfumes in the final stages of formulation. An exhaust fan removes all odors foreign to the one being tested, while the nozzles which are under the operator's control admit the full fragrance of the composition's finely blended ingredients.

Aiding our perfumers in another way—and of incalculable value in their work—is the exercise of constant laboratory control which insures absolute purity and uniformity of all materials used in their compounding . . . more background values—and all a part of our products, apart from their price!

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Swift Sponsor Patriots Contest

Swift & Co., Chicago, sponsored a "Patriot's Contest" on behalf of "Sunbrite Cleaner" last month, in which U. S. Defense Bonds and Stamps, with a maturity value of \$10,000 were the prizes. Entrants were required to finish in 25 words or less the sentence beginning "I am glad I live in America because—," and accompany their entries with three "Sunbrite" labels. In another promotional drive a four-piece "Patriot's Knitting Set" was offered for three "Sunbrite" labels and 35 cents. For each set ordered, Swift & Co., agreed to turn over one cent to a service men's recreation fund.

Studies W. I. Essential Oils

Dr. Ernest Guenther, essential oil expert of Fritzsche Brothers, Inc., New York, has just returned from a tour of the West Indies where he studied numerous projects for the production of essential oils. Dr. Guenther conducted lengthy studies in Porto Rico, Dominican Republic, Haitian Republic, and Cuba. Of the areas visited, Dr. Guenther regards the Dominican Republic and Haiti as the most promising for essential oils, but aside from petitgrain which has been produced in Haiti for some

years, production of other oils is still in its infancy and immediate relief for the American essential oil industry from this source can not be expected, he indicated.

Suggest Cocoil Substitute

Atlantic Refining Co., Philadelphia, is currently suggesting use of "Ultrawet" in making liquid soaps to conserve stocks of coconut oil. According to the company, "Ultrawet" has the property of reducing the viscosity of soap solutions without impairing their effectiveness. The product can be used, it is said, either to conserve stocks of coconut oil or to increase the concentration of liquid soaps made from other fats such as soybean oil, corn oil, cottonseed oil, or peanut oil.

Bond Award To Victor Chem.

Victor Chemical Works, Chicago, has been awarded a treasury department certificate of participation in the payroll savings plan for defense bonds. Employees are participating nearly 100 per cent.

Chicago Plans 2nd Chem. Show

Chicago's second national chemical exposition, sponsored by the Chicago section of the American Chemical Society, will be held next Nov. 17 to 22, at the Stevens Hotel in that city. Victor Conquest, director of research for Armour & Co., chairman of the Exposition Committee, has announced that plans are being developed for a show twice as large as the first one, held in December, 1940. In connection with the affair, a national chemical industrial conference will be conducted, with addresses by leading authorities.

Former NOPCO Head Dies

Mark A. Richards, 57, former president of the National Oil Products Co., Harrison, N. J., died March 12 at his home in Tyron, N. C. Mr. Richards became president of the New Jersey concern in May, 1919. He retired as president Feb. 15, 1932, because of ill health, serving as chairman of the board for a time before withdrawing from the concern and moving to North Carolina.

Magnus, Mabey & Reynard, Inc., New York, were hosts to more than 300 guests at the company's annual dinner to Druggists Supply Corp. members and affiliated manufacturers March 8, at the Hotel Astor, New York. Speakers of the evening were Charles Loring, president of D. S. C., R. D. Kiem, of E. R. Squibb & Son, and Percy C. Magnus, M. M. & R. president.



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CONTRACTS

Treasury Procurement Awards

The following contracts were awarded in a recent opening by the Treasury Procurement Department, Washington, D. C.: Utility Co., New York, 24,000 lbs. grit soap paste at 4.37c a lb.; Lehn & Fink Corp., Bloomfield, N. J., 1,250 gals. disinfectants at 65c a gal., 750 gals. disinfectants at 62.5c a gal., and 6,875 gals. disinfectants at 54c a gal.; National Milling & Chemical Co., Philadelphia, 16,800 lbs. of powdered soap at 3.35c a lb.; United States Soap Mfrs., Media, Pa., 19,200 lbs. laundry soap at 12.9c a lb.

Soap Bids

In a recent opening by the Navy Purchasing Office, New York, the Colgate - Palmolive - Peet Co., Brooklyn, N. Y., submitted a low bid on 65,000 lbs. of laundry soap at 5.89c a lb.

Grit Soap Award

Day & Frick Co., Philadelphia, was awarded contracts for 6,600 cakes grit soap at 3.45c each and 6,600 cakes grit soap at 3.25c each, in a recent opening by the Army Quartermaster Corps, Ft. Sam Houston, Tex.

Creosote Award

In a recent opening by the Army Air Corps, Wright Field, Ohio, Neville Co., Pittsburgh, was awarded a contract for 1,800 gals. creosote at 72.89c a gal.

Floor Wax

In a recent opening by the Printing Office, Washington, D. C., Capitol Chemical Co., Somerville, Mass., submitted the low bid on 100 gals. liquid floor wax, at \$1.43 a gal.

Treasury Procurement Bids

The following submitted low bids in a recent opening by the Treasury Procurement Department,

Washington, D. C.; J. R. Watkins & Co., Winona, Minn., 1,800 lbs. of shaving cream at 21c a lb.; Actofoil Co., 12,000 lbs. automobile soap, at 5.9c a lb.; U. S. Soap Mfg. Co., Media, Pa., 19,200 lbs. of laundry soap, 12.9c a lb.

Grit Soap Award

Day & Frick Co., Philadelphia was awarded a contract for 12,280 lbs. of cake grit soap at 2.9c a lb., in a recent opening by the Army Quartermaster Corps, Brooks Field, Texas.

Army Ordnance Award

In a recent opening by the Army Ordnance, Augusta Arsenal, Ga., N. Brittingham, Philadelphia, was awarded a contract for 3,000 lbs. of scouring powder at 5.9c a lb. and Southern Laboratories, Augusta, Ga., was awarded a contract for 5,000 lbs. of naphthalene at 12.08c a lb.

Shaving Cream Award

In a recent opening by the Treasury Procurement Department, J. R. Watkins Co., Winona, Minn., was awarded a contract for 1,800 lbs. of shaving cream at 21c a lb.

Treasury Procurement Bids

The following submitted low bids in a recent opening by the Treasury Procurement Department,

WHAT OF FATTY ACIDS?

Fatty acids are the "products of the hour" in the soap industry today. Emphasis on glycerine production means one thing,—more fatty acids in the soap kettle. A discussion of Fatty Acids, their possibilities, uses, characteristics, latest developments—a series of two articles by Mark Richelsen of Woburn Degreasing Co. beginning in the next issue!

Washington, D. C.; M. J. Gensberg & Son, Washington, D. C., 50,000 lbs. of sweeping compound at 1.2c a lb.; Stahl Bros. Corp., Buffalo, N. Y., 27,000 lbs. milled soap at 12.48c a lb.

Post Office Supply Bids

In a recent opening by the Post Office Department, Washington, D. C., the following low bids were submitted: Buckingham Wax Corp., L. I. City, N. Y., 1,900 gals. floor wax at 69.8c a gal.; Colgate-Palmolive-Peet Co., Jersey City, 3,240 lbs. chip soap at 9.98c a lb.

Corrosion Preventive Award

Dearborn Chemical Co., Chicago, was awarded a contract for 600 lbs. of corrosion preventive aircraft compound at 26c a lb., in a recent opening by the Army Ordnance, Augusta Arsenal, Ga.

Soap Awards

In a recent opening by the Army Engineers Corp for Nashville, Tenn., the following contracts were awarded: Colgate-Palmolive-Peet Co., Nashville, 50 cases powdered soap \$247.50, and 100 cases mechanic soap \$230; Robert Orr & Co., Nashville, 150 cases toilet soap \$282.

Naphthalene Awards

In a recent opening by the Air Corps, Wright Field, Ohio, the following contracts for naphthalene flakes were awarded: Standard Naphthalene Prods. Co., South Kearney, N. J., 12,000 lbs. naphthalene flakes at 9.25c a lb.; Naphthalene Prods. Co., Birmingham, Ala., 63,500 lbs. of naphthalene flakes at 8.75c a lb.

Treasury Procurement Bids

In a recent opening by the Treasury Procurement Department, Washington, D. C., the following low bids were submitted: Imperial Prods. Co., 12,480 lbs. of scouring compound powder at 2.9c a lb.; New Brunswick Laboratories, Newark, N. J., 1,500 lbs. of hard white soap at 37.3c a lb.; Chemical Mfg. & Distributing Co., Easton, Pa., 48,000 lbs. of laundry soap at 3.69c a lb.

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Courtesy Miami Herald

Salvage for Victory

OUR WAR PRODUCTION BOARD
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WASTE PAPER • SCRAP METAL • OLD RAGS • OLD RUBBER

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Established 1885

Essential Oils • Aromatic Chemicals

Perfume Materials • Colors

NEW TRADE MARKS

The following trade-marks were published in the March issues of the *Official Gazette* of the United States Patent Office in compliance with Section 6 of the Act of September 20, 1905, as amended March 2, 1907. Notice of opposition must be filed within thirty days of publication. As provided by Section 14, fee of ten dollars must accompany each notice of opposition.

Trade Marks Filed

MEKLEEN—This in bold letters describing metal polish. Filed by General Chemical Co., New York, Dec. 29, 1941. Claims use since Oct. 24, 1941.

A'VELL'S—This in script letters describing shampoo. Filed by A'Vell's Co., Chicago, Nov. 8, 1940. Claims use since Feb. 15, 1940.

SPARKIE'S—This in inline letters describing athlete's foot preparation. Filed by LL's Antiseptic, Nashville. Claims use since Jan. 1, 1937.

B. ARROW—This in solid letters pierced by an arrow describing deodorants. Filed by Bernard Arrow, Brooklyn, N. Y., Dec. 19, 1940. Claims use since Dec. 5, 1940.

L. ON-ANTS—This in solid letters describing insecticides. Filed by Medical Supply Co., St. Petersburg, Fla., Nov. 24, 1941. Claims use since June 3, 1941.

AVALON—This in solid letters describing water softener. Filed by Kroger Grocery & Baking Co., Cincinnati, Dec. 30, 1941. Claims use since Aug. 12, 1932.

SHINEX—This in solid letters describing shoe cleaner. Filed by Harold Blank, Brooklyn, N. Y., Nov. 19, 1941. Claims use since Oct. 31, 1941.

WHITEX—This in solid letters describing shoe cleaner. Filed by Harold Blank, Brooklyn, N. Y., Nov. 19, 1941. Claims use since Oct. 31, 1941.

VELVET SUDS—This in broken letters describing soap. Filed by Procter & Gamble Co., Cincinnati, Dec. 8, 1941. Claims use since Oct. 17, 1941.

BON AMI—This in solid letters describing scouring soap. Filed by Bon Ami Co., New York, Dec. 22, 1941. Claims use since Sept. 1, 1939.

DEARBORN—This in broken script letters describing boiler compound. Filed by Dearborn Chemical Co., Chicago, Sept. 13, 1941. Claims use since Nov. 21, 1919.

THE GREAT WESTERN—This in solid letters describing insecticides. Filed by Western Chemical Co., New York, Nov. 14, 1941. Claims use since Apr. 10, 1903.

RAIN DROPS—This in solid lettering describing water softener. Filed Nov. 29, 1941, by Bu-Tay Prods. Co., Huntington Park, Calif. Claims use since June 8, 1940.

ENCOLOID—This in solid letters describing lecithin containing compounds. Filed by Neuberger Chemical Corp., New York, Dec. 15, 1941. Claims use since Nov. 27, 1941.

DEROCIDE—This in solid lettering describing insecticides. Filed Dec. 22, 1941, by Stauffer Chemical Co., San Francisco. Claims use since Aug. 1, 1933.

TANALGINATE—This in stenciled letters describing boiler compound. Filed by Bird-Archer Co., New York, Jan. 7, 1942. Claims use since Sept. 1941.

BEST BUDDY—This in solid letters describing foot powder. Filed Jan. 12, 1942, by Williams Prods. Co., Columbus, Ga. Claims use since Dec. 5, 1941.

EZAP—This in solid letters describing shampoo. Filed Feb. 2, 1942, by Dandro-Nox Co., Baltimore. Claims use since Jan. 23, 1942.

TEEM—This in solid letters describing soap substitute. Filed by

Miracle Industries, Chicago, Nov. 27, 1941. Claims use since Sept. 3, 1941.

FLEA INSURANCE KIT—This in solid letters describing flea soap. Filed Dec. 22, 1941, by Polk Miller Prods. Corp., Richmond, Va. Claims use since May 13, 1941.

HOLLYWOOD BUBBOBATH—This in script and solid letters describing water softener. Filed Mar. 13, 1940, Bubbobath Co., Minneapolis. Claims use since Dec. 6, 1938.

LISTERINE—This in outline letters describing tooth paste. Filed by Lambert Pharmacal Co., Wilmington, Del., Nov. 27, 1941. Claims use since Apr. 1938.

SUGAR AND SPICE—This in solid letters describing bubble bath. Filed Dec. 26, 1941, Irresistible, Inc., Jersey City, N. J. Claims use since Dec. 16, 1941.

DENTROX—This in solid letters describing oral prophylactic. Filed Jan. 22, 1942, by McDonald Beochemic Labs. Ltd., Toronto, Canada. Claims use since Nov. 30, 1940.

HYDROCLEAN—This in solid lettering describing metal cleaner. Filed by Plunkett Chemical Co., Chicago, Feb. 3, 1942. Claims use since June 1, 1940.

KLENZINE—This in solid letters describing drain pipe cleaner. Filed Feb. 3, 1942, Plunkett Chemical Co., Chicago. Claims use June 1, 1930.

P C Co—This in a circular emblem describing disinfectants, insecticide and metal cleaner. Filed Feb. 3, 1942, Plunkett Chemical Co., Chicago. Claims use on latter item 1 and 2 since June 1, 1908 and on 3rd item since June 1, 1910.

KHROFF'S—This in solid letters describing foot powder. Filed Feb. 3, 1942, by Peter Voss, Washington, D. C. Claims use since Oct. 1, 1941.

Trade Marks Granted

393,868. Soap. Filed March 28, 1941. Hewitt Soap Co., Inc., Dayton. Published Dec. 30, 1941. Serial No. 440,152. Class 4.

393,907. Cleaning powder. Filed Sept. 8, 1941. Radiator Spe-



Scarcity of floral oils . . .

Present dwindling supplies of natural floral essences emphasize the value of high quality substitutes.

Synthetic floral essences can be used to replace the natural oils with full satisfaction and marked success in numerous products,—toilet soaps, shampoos, shaving creams, powders, creams, and many others.

In fact, in many products the newer synthetic floral essences are to be *preferred* for the manner in which they reproduce the true fragrance of the living flowers in the finished product,—not to mention uniformity of quality and odor fidelity, and their economy under present conditions.

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119 Adelaide St., W.

New York Office
601 West 26th St.

Montreal Office
135 Commissioners St., W.

cialty Co., Charlotte, N. C. Serial No. 446,890. Published Dec. 23, 1941. Class 6.

393,740. Dental compound. Filed by Tubbs Co., River Falls, Wis., March 17, 1941. Published Dec. 23, 1941. Serial No. 441,649. Class 4.

393,934. Fly spray and disinfectant. Filed Oct. 15, 1941, Moorman Mfg. Co., Quincy, Ill. Serial No. 447,817. Published Dec. 23, 1941. Class 6.

393,936. Animal shampoo. Filed by Tandy Piatt, Chicago, Oct. 15, 1941. Serial No. 447,817. Published Dec. 23, 1941. Class 6.

393,938. Wax remover. Filed Oct. 17, 1941, Rinshed-Mason Co., Detroit. Serial No. 447,892. Published Dec. 30, 1941. Class 4.

393,957. Cleaning compound. Filed by West Disinfecting Co., Long Island City, Oct. 28, 1941. Serial No. 448,212. Published Dec. 30, 1941. Class 6.

393,970. Toilet soap. Filed by James Younghusband, Chicago, Nov. 8, 1941. Published Dec. 30, 1941. Class 4.

393,978. Antiseptic. Filed by Walter Gourlay, Philadelphia, Oct. 10, 1941. Serial No. 447,661. Published Dec. 23, 1941. Class 6.

393,988. Moth-proofing composition. Filed Oct. 13, 1941, Zonite Products Corp., New York. Serial No. 447,774. Published Dec. 30, 1941. Class 6.

393,989. Moth-proofing composition. Filed Oct. 13, 1941, Zonite Products Corp., New York. Serial No. 447,775. Published Dec. 30, 1941. Class 6.

Home Made Soap

(From Page 26)

newspaper publicity for helping our war effort. Specifically, she had done a lot of canning and preserving. (What do they can in Oklahoma in the winter?) Also, she had made 300 pounds of laundry soap from waste kitchen grease. Now, 300 pounds of soap is a lot of soap for one lady to make all by herself, but that is not the important point. If she wants to make her own soap, well and good,

that is her business,—but the Oklahoma newspapers should cease and desist from labeling this lady a patriot for her soap-making efforts. If a million other women did the same thing, it would mean a reduction of something like 30,000,000 pounds in glycerine output. Far better it would have been if she had sold her grease to a local renderer,—and this all could have been arranged with news photographers on deck just the same and the lady would have lost none of her glory. Making three or four pounds of soap at home a' la *Consumers' Guide* is bad enough, but when it comes to 300 pounds, that's going a little too far,—and makes the Park Avenue ladies look very much small-time.

Stampede to Buy Soap

FROM the very start of this home-made soap controversy, the Association of American Soap & Glycerine Producers was active in its efforts to head off any further spread in the fad,—and it has been shown to be just this in the case of most recent converts to the practice. The Association both through contacts with government officials and with the press attempted to give a true picture of the situation, showing that every additional pound of soap made at home from waste kitchen grease meant a proportionate reduction in glycerine production by the soap industry. The Association was responsible for the publication of numerous newspaper articles which aided in getting the true facts across to the American housewife. It helped to allay fears that there would be a shortage of soap and to show that home soap manufacture at best is usually uneconomical.

Published advice on home-made soap did more than encourage people to attempt to produce soap on their kitchen stoves. It implied that there was going to be a shortage of soap and of the fats and oils from which soap is made. This along with direct advice to the housewife to conserve soap, brought about a buying stampede in all sorts of soap products. Department, drug and grocery

stores from all parts of the country reported what was the equivalent of a "run" on their soap stocks for a period of several weeks. Many of them indicated that they had been cleaned out of supplies within a week after the first published news on an impending soap shortage. Those who investigated the situation reported that the movement of soap from retailers' shelves had been the heaviest in many a year and that there was no doubt but that housewives were hoarding all sorts of soap products.

Home-made Soap Poor Stuff

ONE point in this home-made soap discussion which was for all practical purposes ignored in the public prints, is the matter of the quality of such soap. No writer as far as could be determined stated that home-made soap at its best is pretty poor stuff,—that the quality of perhaps the poorest factory-made soap is far and away better than anything which could be made at home. Anything resembling accurate or complete saponification in a home-made soap would be rare, purely a shot in the dark. Soaps made from household fat,—beef, lamb, pork fats,—and without any other oil, are poor lathering soaps. In hard water districts, they are well nigh impossible. Compare them with the newer laundry soap products on the market today in performance, and home-made soap has not a leg to stand on, not even low cost if true economy is considered. This is the point which most of the writers did not take into consideration at all.

Looking over the situation now, it appears that much of the home-made soap excitement has died down. What with the W.P.B. and the Soap & Glycerine Association, and individual soapers, and others quickly on the job to squelch the idea, the movement had not gone very far when it was thrown into reverse. And, in all likelihood, the American public has had impressed upon it the great necessity of glycerine in this war,—and likewise, the fundamental idea in glycerine production, "No soap.—no glycerine!"

**DU PONT CONTRIBUTIONS
TO AMERICAN AROMATICS**



DU PONT
Aromatics

★ A number of Du Pont contributions, of which "Astrotone" is one, are helping the perfumer to carry on in this difficult period. In many formulations, the constant strength, purity, and odor quality of synthetic aromatics prove superior to those of natural compounds.

☆ The same Du Pont research in molecule building that led to nylon and neoprene created "Astrotone" fixative. Unlike the usual synthetic musks, "Astrotone" is a member of the family of large ring compounds to which natural musk belongs. More than this, it is a well defined chemical body — pure and uniform. It is colorless — and imparts no color to products in which it is used.

Several years before present world conditions created a shortage of musks, "Astrotone" fixative was used in some of the finest perfumes. Today, many users know that it serves the purpose of the old type musks. And "Astrotone" has the advantage of constant purity, quality, and strength.

"Astrotone" may be used to replace infusions of natural musk. As a fixative in fine perfumes, it gives rich harmony — leaves a sweet, warm note after other odors fade. It is also used for powders and to replace nitro musk in creams.

*TRADE-MARK REG. U. S. PAT. OFF.

E. I. DU PONT DE NEMOURS & CO. (INC.), FINE CHEMICALS DIVISION, WILMINGTON, DELAWARE

As of March 31, 1942

NEW YORK—The market for vegetable, animal and fish oils, and fats and greases continued to show a firm tone throughout the month, with prices maintained and offerings light on most fatty materials in demand by the soap and sanitary products industry. Offerings of many materials were scarce as sellers continued to await developments regarding the possibility of fats and oils price ceilings being revised. Prices were advanced on linseed oil and certain of the fish oils, and the fatty acids.

Factors affecting the market for raw materials during the month were government orders relating to price ceilings on rotenone-bearing roots, use of chromium compounds, and use of rapeseed oil. The use of chromium in the manufacture of soap was specifically prohibited in Order M-18-b, issued March 26 by the director of Industry Operations, Washington, D. C. The order refers to the use of certain compounds of chromium which are used in bleaching oils for soap. Chromium used in the preservation of wood is restricted by the order to preference ratings of A-10 or higher.

Numerous price advances took place among the essential oils and aromatic chemicals this month, many items being advanced sharply as a result of the turn of the war in the Far East. Java citronella was upped \$1.00 a pound, and Ceylon citronella advanced 35 cents a pound during the month, while other Far Eastern oils affected were cananga, cassia, lemongrass, patchouli, and vetiver, among others.

Among the insecticide raw materials pyrethrum powder, pyrethrum extract and red squill became

more expensive, while prices of powdered rotenone-bearing materials were reduced through imposition of a price ceiling by the OPA.

Animal Fats

Prices of inedible tallow and greases remained at ceiling levels throughout the month. Offerings were reported as generally light. The bureau of the census reported during the month that 1,057,303,000 pounds of inedible tallow were used in soap manufacture during 1941, as compared with 786,456,000 pounds in 1940. Grease used in soap making was given as 310,487,000 pounds in 1941 as compared with 256,886,000 pounds in 1940.

Vegetable Oils

Offerings of domestic oils were light throughout the period, with offerings of imported materials still lacking and no real relief in sight. Production of domestic oils is to be expanded tremendously during 1942 according to preliminary reports on the acreage of oilseeds to be planted in the United States in the coming season. The planting of 14,085,000 acres in soybeans is

planned for 1942 as compared with 9,996,000 acres in 1941. For peanuts the scheduled acreage is 4,150,000 as compared with 2,493,000 acres in 1941. The prospective acreage of flax to be seeded for flaxseed production in 1942 is 4,037,000 acres as compared with 3,367,000 acres planted in 1941.

Consumption of coconut oil in soap in 1941 was 484,124,000 pounds as compared with 396,857,000 pounds in 1940. For palm oil, the 1941 figure was 129,871,000 pounds as compared with 84,934,000 pounds used in soap making in 1940. Use of soybean oil as a soap ingredient was expanded to 24,737,000 pounds in 1941 as compared with the 17,612,000 pounds used in 1940.

Use of rapeseed oil in soap was prohibited under WPB order M-77 which was issued late in the month to become effective April 1. Only 5,000 pounds of rapeseed oil were used in soap making in 1941, according to the U. S. bureau of the census.

Insecticide Materials

Grinders of powdered rotenone-bearing roots were requested on March 16 not to sell any quantity at a price in excess of 35 cents a pound for the 5 per cent grade, f.o.b. grinder's plant. Cube is being offered at this level but quotations on derris are purely nominal, according to certain sellers, who are not offering the material on the open market. Prices on pyrethrum extract 20 to 1 were advanced during the month to a level of \$5.95 to \$6.10 a pound, as compared with last month's level of \$5.70 to \$5.75. Red squill was also advanced,—being quoted by various sellers at from 85 cents to \$1 a pound.

WHAT PRICE CITRONELLA?

Prices for some essential oils in the American markets have almost reached the fantastic stage. Bergamot at \$30 with geranium, lavender, etc. in proportion is perhaps no more fantastic from the angle of the soap perfumer than \$3.00 for Java citronella. A report on April 1 stated that an attempt to buy at this figure in New York was a failure,—and it was not an April Fool's joke either.—The Editor.

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PRICES

(As of March 31, 1942)

Minimum Prices are for car lots and large quantities. Price range represents variation in quotations from different suppliers and for varying quantities.

Chemicals

Acetone, C.P., drums	lb.	\$.08½	\$.09
Acid, Boric, bbls., 99½%	ton	106.00	128.00
Cresylic, drums	gal.	.81	.86
Low boiling grade	gal.	.81	.86
Muriatic, C. P., carboys	lb.	.08	—
Oxalic, bbls.	lb.	.11¼	.14¼
Adeps Lanae, hydrous, drums	lb.	.32	.34
Anhydrous, drums	lb.	.33	.35
Alcohol, Ethyl, drums	gal.	8.19	8.25½
Complete Denat., SD1, dms., ex.	gal.	.60	.65
Alum. Potash lump, bbls.	lb.	.04½	—
Ammonia Water, 26°, drums	lb.	.02¼	.02½
Ammonium Carbonate, tech., drums	lb.	.08¼	.09¼
Bentonite	ton	25.00	51.00
Bleaching Powder, drums	100 lb.	2.25	3.35
Borax, pd., bbls., bags	ton	50.00	75.00
Carbon Tetrachloride, car lots	gal.	.73	1.17
L. C. L.	gal.	.80	1.27
Caustic, see Soda Caustic, Potash Caustic			
China Clay, filler	ton	7.60	16.00
Cresol, U.S.P., drums	lb.	.11	.11¼
Creosote Oil	gal.	.141	.15¼
Feldspar, works	ton	30.00	35.00
Formaldehyde, bbls.	lb.	.05¼	.07¼
Fullers Earth	ton	8.50	15.00
Glycerine, C.P., drums	lb.	.18¼	.19¼
Dynamite, drums	lb.	.18¼	.18¼
Saponification, drums	lb.	.12¼	.14¼
Soap lye, drums	lb.	.11½	—
Hexalin, drums	lb.	.23	—
Lanolin, see Adeps Lanae.			
Lime, live, bbls.	ton	6.25	13.00
Mercury Bichloride, drums	lb.	2.24	2.39
Naphthalene, ref. flakes, bbls.	lb.	.08	—
Nitrobenzene (Mirbane) drums	lb.	.08	.09
Orthodichlorobenzene	lb.	.07½	.08½
Paradichlorobenzene, drums	lb.	.11	.15
Petrolatum, bbls. (as to color)	lb.	.03½	.08
Phenol (Carbolic Acid) drums	lb.	.12½	.14¼
Pine Oils, drums	gal.	.74	1.10
Potash, Caustic, solid	lb.	.06¼	.06¼
Flake, 88-92%	lb.	.07	.07¼
Liquid, 45% basis	lb.	.02½	.03¼
Potassium Carbonate, solid	lb.	.06½	.06¼
Liquid	lb.	.03	.03¼
Pumice Stone, coarse	lb.	.03½	.04¼
Rosins (net wt., ex dock, New York)—			
Grade D to H	100 lb.	3.47	3.52
Grade I to N	100 lb.	3.53	3.80
Grade WG to X	100 lb.	4.70	5.20
Wood, ex. dock	100 lb.	3.12	4.03
Rotten Stone, dom., bags	lb.	.02½	.04
Silica	ton	20.00	27.00
Soap, Mottled	lb.	.04¼	.04¼
Olive Castile, bars	lb.	.28	.38
Olive Castile, powder	lb.	.33	.40
Powdered White, Neutral	lb.	.18	.24

Soap . . .

Olive Oil Foot, bars, 68-70%	lb.	—	—
Green, U.S.P.	lb.	.09	.10
Tallow Chips, 88%, car lots	lb.	.11	.11¼
Soda Ash, cont., wks., bags, bbls.	100 lb.	1.05	1.45
Car lots, in bulk	100 lb.	.90	.95
Soda Caustic, cont., wks., solid	100 lb.	2.30	—
Flake	100 lb.	2.70	2.95
Liquid, tanks, 47-49%	100 lb.	1.92½	1.95
Soda Sal., bbls.	100 lb.	1.10	1.30
Sodium Chloride (Salt)	ton	14.20	18.00
Sodium Fluoride, bbls.	lb.	.08	.09¼
Sodium Hydrosulfite, bbls.	lb.	.17	.18
Sodium Metasilicate, anhyd.	100 lb.	4.00	5.30
Granulated	100 lb.	2.50	3.55
Sodium Pyrophosphate	100 lb.	5.25	6.80
Sodium Silicate, 40 deg., drum	100 lb.	.80	1.20
Drums, 52 deg. wks.	100 lb.	1.40	1.80
Tar Acid Oils, 15-25%	gal.	.27½	.33½
Triethanolamine	lb.	.18	.20
Trisodium Phosphate, bags, bbls.	100 lb.	2.70	4.30
Zinc Oxide, lead free	lb.	.07¼	.07¼

Oils — Fats — Greases

Babassu, tanks, futures	lb.	—	Nom.
Castor, No. 1, bbls.	lb.	.14	.14½
No. 3, bbls.	lb.	.13%	.14¼
Coconut (without excise tax)			
Manila, tanks, N. Y.	lb.	—	—
Tanks, Pacific Coast, futures	lb.	—	—
Copra, bulk, coast	lb.	—	—
Corn, tanks, West	lb.	.12%	—
Cottonseed, crude, tanks, mill	lb.	.12½	.12%
PSY, futures	lb.	—	—
Fatty Acids—			
Corn Oil, tanks, Chicago	lb.	.15	.15¼
Coconut Oil, tanks, Twitchell, Chi.	lb.	.17½	.18
Cotton Oil, tanks, Chicago	lb.	.14¼	.14%
Settled soap stock, Chicago	lb.	.03%	.04
Boiled soap stock, 65%, Chi.	lb.	.04%	.05
Foots, 50%, Chicago	lb.	.03%	.04
Red Oil, bbls., dist. or sapon.	lb.	.1330	.1430
Tanks	lb.	.1245	—
Stearic Acid, saponif.			
Double pressed	lb.	.1580	.1680
Triple pressed	lb.	.1855	.1985
Greases, choice white, tanks	lb.	.0971¼	—
Yellow	lb.	.0929%	—
Lard, city, tubs	lb.	.12½	—
Linseed, raw, bbl.	lb.	.1390	.1470
Tanks, raw	lb.	.1300	—
Olive, denatured, bbls., N. Y.	gal.	4.40	4.50
Foots, bbls., N. Y.	lb.	.19½	.20
Palm, Sumatra, cif. New York, Tanks	lb.	—	—
Palm, kernel, f.o.b. San F.	lb.	—	—
Peanut, crude, tanks, mill	lb.	.13	Nom.
Soya Bean, domestic, tanks, crude	lb.	.12½	Nom.
Stearin, oleo, bbls.	lb.	.1054	—
Tallow, special, f.o.b. N. Y.	lb.	.0957%	—
City, ex. loose, f.o.b. N. Y.	lb.	.0971¼	—
Teaseed Oil, crude	lb.	—	—
Whale, refined	lb.	.1070	Nom.

DREYER'S IMITATION ESSENTIAL OILS

Our Imitation Essential Oils have proven very interesting to Perfumers in every line, whether they be for fine perfumes or for soap compounds. Our laboratories have developed many outstanding Imitations over the past two years and are ready and willing to offer suggestions on the use of these materials. We recommend that they be used to take the place of the natural products or complement them in part.

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AROMATICS

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No. 200
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No. 50
PEER (Plastic)

No. 100
PEER Push-Up
(Metal)

No. 300
Tilt-Liquid

No. 425

No. 550
Tank
Liquid

Gravity System Valve
No. 600

Soap Tank

Gravity Foam Valve
No. 650

Moore Soap Dispensing Products
Featuring
Dependability of Operation

MOORE BROTHERS COMPANY
67 VESTRY STREET
NEW YORK CITY

(As of March 31, 1942)

Essential Oils

Almond, Bitter, U.S.P.	lb.	\$3.50	\$3.75
Bitter, F.F.P.A.	lb.	4.75	5.00
Sweet, cans	lb.	2.65	2.75
Anise, cans, U.S.P.	lb.	3.50	3.75
Bay, 55-66% phenols, cans	lb.	1.65	1.70
Bergamot, coppers	lb.	32.00	Nom.
Artificial	lb.	2.75	9.25
Birch Tar, rect., cans	lb.	—	—
Crude, cans	lb.	—	—
Bois de Rose, Brazilian	lb.	5.00	5.25
Cayenne	lb.	—	—
Cade (juniper tar), cans	lb.	.80	.95
Cajeput, tech, drums	lb.	2.50	2.60
Calamus, cans	lb.	—	—
Camphor, Sassy, drums	lb.	—	—
White, drums	lb.	—	—
Cananga, native, cans	lb.	18.00	19.00
Rectified, cans	lb.	19.00	20.00
Caraway Seed	lb.	15.00	Nom.
Cassia, Redistilled, U.S.P.	lb.	11.00	Nom.
Cedar Leaf, cans	lb.	1.10	1.65
Cedar Wood, light, drums	lb.	.95	Nom.
Citronella, Java, drums	lb.	2.50	2.75
Citronella, Ceylon, drums	lb.	1.70	1.80
Clove, U.S.P., cans	lb.	1.60	1.70
Eucalyptus, Austl., U.S.P., cans	lb.	.83	.88
Fennel, sweet, cans	lb.	3.25	3.50
Geranium, African, cans	lb.	25.00	Nom.
Bourbon, cans	lb.	25.00	Nom.
Turkish (Palmarosa)	lb.	5.25	5.50
Hemlock, cans	lb.	1.20	1.25
Lavender, 30-32% ester, cans	lb.	—	—
Spike, Spanish, cans	lb.	4.25	4.35
Lemon, Ital., U.S.P.	lb.	5.50	Nom.
Cal.	lb.	3.25	—
Lemongrass, native, cans	lb.	3.75	4.00
Linaloe, Mex., cases	lb.	3.50	3.75
Nutmeg, U.S.P., cans	lb.	4.50	4.75
Orange, Sweet, W. Ind., cans	lb.	6.00	6.25
Italian cop	lb.	8.00	Nom.
Distilled	lb.	1.70	—
California, expressed	lb.	3.25	—
Origanum, cans, tech	lb.	2.85	2.90
Patchouli	lb.	9.00	10.00
Pennyroyal, dom.	lb.	—	—
Imported	lb.	2.75	3.00
Peppermint, nat., cans	lb.	5.40	5.65
Redis, U.S.P., cans	lb.	5.90	6.15
Petitgrain, S. A., cans	lb.	1.85	1.90
Pine Needle, Siberian	lb.	2.75	3.00
Rosemary, Spanish, cans	lb.	2.25	2.30
drums	lb.	2.10	2.15
Sandalwood, dom., dist., U.S.P.	lb.	5.85	6.00
Sassafras, U.S.P.	lb.	1.75	1.80
Artificial, drums	lb.	—	—
Spearmint, U.S.P.	lb.	3.10	3.25
Thyme, red, N. F.	lb.	2.10	2.25
White, N. F.	lb.	2.50	2.75
Vetiver, Java	lb.	50.00	Nom.
Ylang Ylang, Bourbon	lb.	20.00	24.00

Aromatic Chemicals

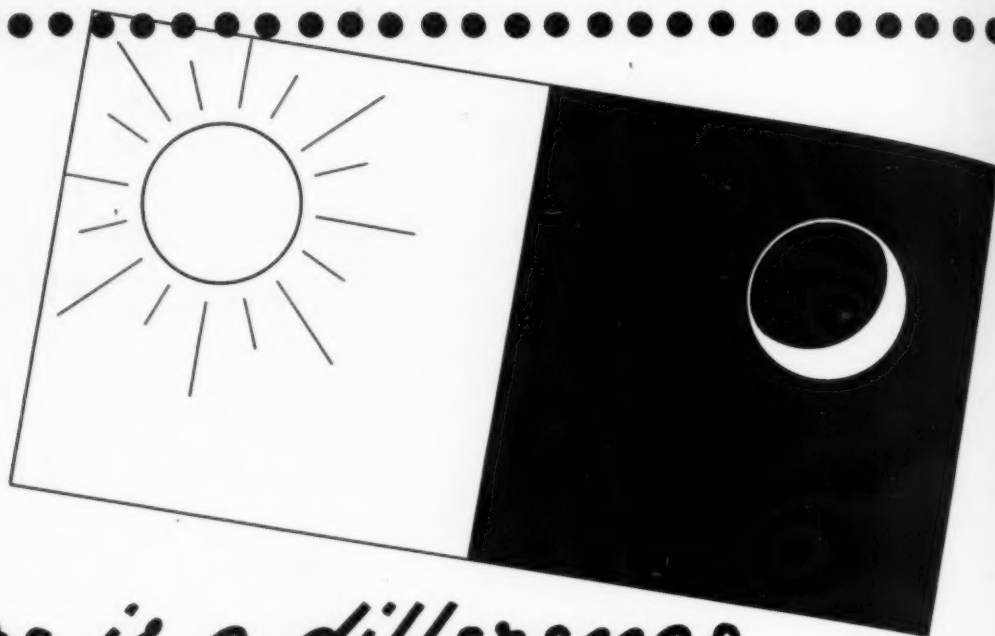
Acetophenone, C. P.	lb.	\$1.55	\$1.60
Amyl Cinnamic Aldehyde	lb.	—	—
Anethol	lb.	2.25	2.40
Benzaldehyde, tech.	lb.	.45	.55
N. F. VI	lb.	.85	.95
Benzyl, Acetate	lb.	.59	Nom.
Alcohol	lb.	.63	.75
Citral	lb.	5.50	7.00
Citronellal	lb.	2.75	3.25
Citronellol	lb.	7.00	7.25
Citronellyl Acetate	lb.	—	—
Coumarin	lb.	2.75	3.25
Diphenyl oxide	lb.	.43	.50
Eucalyptol, U.S.P.	lb.	2.00	2.50
Eugenol, U.S.P.	lb.	2.75	2.80
Geraniol, Soap	lb.	1.10	1.50
Other grades	lb.	1.50	3.50
Geranyl Acetate	lb.	—	—
Heliotropin	lb.	5.25	Nom.
Hydroxycitronellal	lb.	10.25	10.50
Indol, C. P.	lb.	28.00	30.00
Ionone	lb.	2.75	3.95
Isoborneol	lb.	.81	.90
Iso-bornyl acetate	lb.	.80	.95
Iso-Eugenol	lb.	—	—
Linolool	lb.	6.75	7.00
Linalyl Acetate	lb.	5.50	7.25
Menthol, natural	lb.	13.50	13.75
Synthetic, U.S.P.	lb.	—	—
Methyl Acetophenone	lb.	—	—
Anthranilate	lb.	2.20	2.35
Paracresol	lb.	—	—
Salicylate, U.S.P.	lb.	.35	.40
Musk Ambrette	lb.	4.00	4.45
Ketone	lb.	4.15	4.60
Xylol	lb.	1.40	1.80
Phenylacetaldehyde	lb.	5.00	6.00
Phenylacetic Acid	lb.	1.85	1.90
Phenylethyl Alcohol	lb.	2.10	2.50
Rhodinol	lb.	—	—
Safrol	lb.	2.25	2.45
Terpineol, C.P., drs.	lb.	.40	—
Cans	lb.	.43	—
Terpinyl Acetate, 25 lb. cans	lb.	.87	—
Thymol, U.S.P.	lb.	3.00	Nom.
Vanillin, U.S.P.	lb.	2.35	2.75
Yara Yara	lb.	1.80	1.85

Insecticide Materials

Insect Powder, bbls.	lb.	.29	.32
Pyrethrum Extract			
5 to 1	gal.	1.50	1.55
20 to 1	gal.	5.95	6.10
30 to 1	gal.	8.90	9.10
Derris, powder—4%	lb.	.32	—
Derris, powder—5%	lb.	.35	—
Cube, powder—4%	lb.	.32	—
Cube, powder—5%	lb.	.35	—
Squill, red, dried	lb.	.85	1.00

Waxes

Bees, white	lb.	.61	—
African, bgs.	lb.	.49	—
Refined, yel.	lb.	.59	.60
Candelilla, bgs.	lb.	.38	—
Carnauba, No. 1, yellow	lb.	.87	.88
No. 2, N. C.	lb.	.82	.83
No. 3, Chalky	lb.	.75	.76
Ceresin, yellow	lb.	.13½	.18
Montan Wax, bags	lb.	.45	.46
Paraffin, ref. '25-130	lb.	.0520	.0560



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tion of the proper quality. Although some special high-priced active carbon may be essential to certain applications, yet this same active carbon may be no better pound for pound than a less expensive active carbon for certain other applications.

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PRODUCTION

SECTION

A section of SOAP devoted to the technology of oils, fats, and soaps published prior to Jan. 1, 1932, as a separate magazine under the title, Oil & Fat Industries.

Testing Soaps and Emulsions

THE practical procedures described for the chemical examination of liquid soaps, emulsions, theater sprays, disinfectants, etc., require a minimum of skill and are not intended to give accurate scientific results. Such examinations merely indicate roughly the components of the various products. Such components are usually themselves mixtures, a fact which should not be disregarded. Pine-oil fluids illustrate this point so well that they will be discussed as an example.

For equipment, a simple graduated cylinder calibrated to hold 100 cc. is fitted with a bored cork stopper fitted with a glass tube about a yard long which serves as a reflux air condenser. The cylinder should be narrow and tall and of heat-resistant glass.

Knowledge of the most probable composition of the product to be tested simplifies its examination considerably. With pine-oil fluids, the amount present varies from 15 to 63 per cent. The emulsifying agent is either rosin soap, olein soap or sulfonated castor oil. Sometimes rosin oil, tall oil, fatty acids other than oleic, naphthenic acids, or various sulfonated products are used.

The ratio of pine oil to oleic acid or other fatty acids or rosin,

varies from 100:20 to 100:50, depending on the pine-oil content. Generally speaking, the fatty-acid content must be increased if the pine oil is lowered. Alcohol, if present as a coupling agent, reduces the amount of fatty acid necessary to make a given amount of pine oil soluble in a given amount of water. If sulfonated castor oil (Turkey red oil) is used, the ratio of pine oil to castor oil sulfate is about 100:80 to 100:50.

The liquid to be examined is transferred to the cylinder to the 50 cc. mark. Then 25 cc. of distilled water are added and the two thoroughly mixed. Diluted sulfuric acid or hydrochloric acid is added until two clear layers form. To bring this about, the cylinder fitted with the reflux tube, is put into hot, or if necessary, boiling water. Usually 5-10 cc. of 1:2 sulfuric acid are sufficient for addition to 50 cc. of original liquid.

When the top layer has become completely or almost completely clear, the total amount of water-insoluble components is read off after the contents have been allowed to reach room temperature. It is advisable to make the reading before the oil layer has solidified. The purpose of the air condenser is to prevent evaporation of the pine oil or essen-

tial oils. The volume of oil layer multiplied by two gives the content of the water-insoluble components, fatty acids or the like and pine oil, in per cent by volume.

The cylinder is again put into the boiling water bath and left there until the volatile substances are driven off, the air condenser being left off this time. The steam produced from the water layer passes through the oil layer and carries away the pine oil. After cooling, the volume of the oil layer is read off once more. The difference between the first reading and this one gives the content of pine oil; the reading this time gives the content of fatty acids (when multiplied by two) in per cent by volume.

Further useful information is obtained by dissolving a few drops of the fatty acids in acetic anhydride and underlaying with sulfuric acid of specific gravity 1.53. A violet ring indicates the presence of rosin. The presence of wool-fat is indicated by a somewhat similar color reaction. A positive test should be accepted as a proof of rosin only if the fatty acids have a resin-like character.

The presence of sulfonated castor oil can be shown by a test for sulfates. A few cc. of sample liquid are put in a test tube, diluted with distilled water and decomposed by the

addition of hydrochloric acid, and boiling for about five minutes. The contents of the tube are then filtered through a small filter in which the paper has been previously thoroughly wetted with distilled water. The clean water portion of the reaction product passes through the filter, while the oily substance is retained. Addition of barium chloride solution to the filtrate produces a heavy white precipitate of barium sulfate if sulfuric acid is present.

Ammonia can be detected on boiling the diluted liquid with caustic solution, by the odor of ammonia given off and the affect of the vapors on litmus paper. To detect triethanolamine, a portion of the filtrate above, but without addition of barium chloride, is made alkaline with caustic and 1-2 drops of diluted aqueous copper sulfate solution added. The solution shows a deep violet-blue if triethanolamine is present. Leo Ivanovsky. *Manufacturing Chemist* 12, 246-8 (1941).

Poor Soap Shape

If a soap cake loses its shape it becomes unsightly, a result rather frequently seen in unwrapped tablets. One important reason why soap loses its proper form is that the soap presses may be inaccurate owing to old age and misuse. Old soap presses are hard on dies, even new ones, and soon begin to wear them so that they produce too much scrap and dust. The appearance of the latter is a sure sign that pressing will be poor and stops for cleaning quite frequent. Stoppage to remove scrap and dust from dies halts work on the whole production line.

Absence of the correct consistency or hardness in soap cakes may also explain loss of shape. This is not so apt to be the cause, but may occur when a sudden emergency or wide market fluctuations make it necessary to substitute other fats for those ordinarily used. Even though the final appearance of the soap may be the same, slight differences in hardness may be sufficient to cause later disfiguration on handling. This

Transparent Soap Studies

Examination with the polarization microscope showed that the glassy condition of glycerine-containing or transparent soaps is due to inhibition of the usual crystallization of the fatty-acid salts, and that the soap represents a metastable system resembling a super-cooled melt. Crystallization may supervene as a result of warming the soap, or if an unsuitable fat stock was chosen; for example, rosin, palmitic-acid and castor-oil acid soaps are less liable to crystallize than stearic-acid soaps.

Household soaps, especially those containing rosin, often show glassy regions in the more rapidly cooled outer parts of the bar. Attempts to produce a uniform, transparent soap by very rapid chilling on cooling rolls failed, probably because the temperature of the soap fell too far below the optimum and into a range in which the stability of the glassy system again decreases.

Transparency can be obtained, however, by mechanical deformation.

point may be of special importance under present conditions. *Am. Perfumer & Essential Oil Review* 44, No. 2, 45-6 (1942).

Residue in Glycerine

By means of the infrared drying lamp "total residue at 160° C." may be obtained in one drying of crude glycerine. Analytical results on a standard A.O.C.S. sample of crude glycerine agreed well with the established analysis for both "total residue" and "aceten on residue." Pure glycerine even in the presence of sodium chloride is completely evolved under the infrared lamp at 160° C. Wm. J. Govan, Jr. *Oil & Soap* 27, (1942).

Detergents for Oil Size Removal

Linseed-oil size can be removed from acetate and viscose rayon by synthetic detergents such as the fatty alcohol sulfates provided sufficient quantities are used. Addition of alkali is necessary, small amounts of soda ash being preferable for vis-

A transparent, hard milled soap is obtained without the use of alcohol, by repeated milling and plodding—five to six times—provided the temperature of the soap during these operations does not exceed the upper limit of stability of the vitreous form. This temperature varies according to the composition of the soap. The less the distance between the milling rolls, the greater the degree of vitrification. Transparency, color and hardness of the product are controlled by regulating the working temperature. The darker streaks often found in ordinary milled soaps may be due not to uneven distribution of the color, but to patchy formation of glassy soap. Inclusion of castor or coconut oil or of rosin in the soap base facilitates the development of transparency. Such milled, transparent soap may show a fluorescence at surfaces cut at right angles to the axis of the extruded bar. B. Tiutiunnikov, S. Pleschkov and A. Tschernitschkina. *Seifensieder Ztg.* 68, 193-4, 205-6, 215-16, 227-8, 237-8.

cose and small amounts of ammonia for acetate rayon. Oxidizing agents may also be used advantageously with the detergents. Synthetic detergents containing organic solvents are not necessary. A. Rapp and H. Kadner. *Melliand Textilber.* 22, 376-80.

Fat Stabilization

Fatty acids, animal and vegetable fats, and fish oils are stabilized, or autoxidation inhibited by the addition of 0.01-1 per cent of one or more of the methyl, ethyl, propyl and butyl esters of gallic acid. T. Sabalitschka and E. Bohm, to Heyden Chemical Corp. U. S. Patent No. 2,255,191.

Container Cleaning

The container to be cleaned is heated, then a dissolved alkaline cleansing agent is sprayed to form a mist with the aid of steam, this mist being disseminated in the container and precipitated on its walls. After action by the cleaner, the latter is rinsed off. Henkel & Cie. G.m.b.H. British Patent No. 520,413.

"Converter" Toilet Soap

"CONVERTER" soap, produced by intense working and agitation under suitable conditions of heat and pressure, has incorporated in it enough air or other non-reacting gas to reduce its density below that of water. The finished product has a compact homogeneous structure, smooth feel, improved wearing qualities over other unmilled soap, and but little tendency to swell or crack when left in water. However, when this process is applied to a toilet-soap base, the resulting soap tablets, although possessing the advantageous features mentioned, lather less freely than tablets made from the same soap base by the normal milling and plodding processes.

It has been found that if a portion of the normal toilet soap base is replaced by soda soaps derived from soybean oil or certain other animal and vegetable oils—termed "solubilizing soda soaps," the reduction in lathering properties is overcome and an excellent free-lathering but hard toilet soap is produced. The oils should be liquid at ordinary temperatures, have iodine numbers between 78 and 145, and be substantially free from glycerides possessing three or more double bonds and from fatty acids of such glycerides. Suitable oils for preparing solubilizing soda soaps are, besides soybean oil, cottonseed oil, corn, castor, and partially hardened whale oil. The proportion of such oil to be added depends to some extent on the titres of the fatty acids from which the solubilizing soda soap and toilet-soap base, respectively, are derived. From 10 to 15 per cent of soyabean oil soap, calculated on anhydrous soaps, has been found sufficient.

Gas is incorporated into the mass at 65-110° C. at a pressure up to 100 pounds per square inch. Many types of mechanical agitation can be used to expose all parts of the soap mass equally to the source of heat at a relatively rapid rate, and to distribute air and gases throughout the

soap mass. An example of a fat charge is 65 per cent tallow, 20 coconut oil and 15 per cent soyabean oil. The finished soap as it comes from the pan has a moisture content of about 30 per cent, which is reduced by any of the usual methods to 8-25 per cent. Lever Brothers & Unilever Ltd. British Patent No. 540.063.

Bentonite as Water Softener

Bentonite coagulates to form flocs that serve to remove suspended impurities in water when the clay is dispersed as negatively charged particles in waters containing electrolytes. Its coagulative effect is slight in the presence of monovalent cations but fairly rapid in hard waters containing calcium or magnesium salts or both. The presence of trivalent aluminum or iron accelerates coagulation. H. L. Olin and H. F. Freeman. *Paper Trade J.* 113, No. 19, 38-42 (1941).

Adsorption of Wetting Agents

Whether a wetting agent will be adsorbed by wool depends in part on the type of ionization of the agent and in part on the pH of the solution in which the agent is dissolved. Adsorption is of interest because economic use of a solution of wetting agent depends not only on the wetting efficiency of the agent, but also on the rate at which the agent is exhausted from solution.

Anion-active agents such as the sodium salt of a sulfated fatty alcohol, of an alkyl naphthalene sulfonate, or of similar compounds, are more strongly adsorbed from solutions more acid than pH 3.5, the isoelectric point of wool, at which its ions of opposite charge are in balance. On the other hand, cation-active wetting agents such as quaternary ammonium salts are more strongly adsorbed by wool on the alkaline side of its isoelectric point. Nonionizing wetting agents such as a polymerized ethylene oxide condensation product,

and polymerized ethylene oxide, show relatively little adsorption over a pH range of 1 to 11. One nonionizing agent even showed negative adsorption, the wool being preferentially wet by water with the surface-active chemical removing impurities into the solution. George C. Le Compte and Joseph W. Creely. *Am. Dyestuff Reporter* 31, 121-2 (1942).

Continuous Refining

Continuous processes in oil refining have been developed in Europe but have been little used in the U. S. Advantages of the continuous system are described. Continuous bleaching processes permit better control of the adsorbent used because maximum efficiency in bleaching power of the clay or carbon has been found unattainable when the adsorbents are added in small increments to the bleach tank. E. M. James. *Proc. Inst. Food Technologists* 1941, 224-9.

Oil-in-water Emulsions

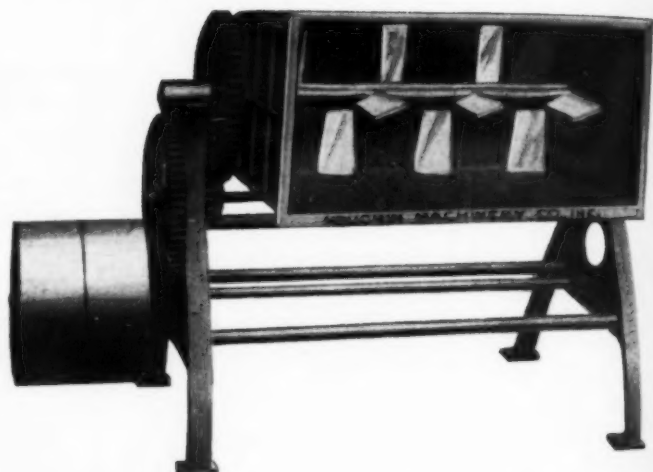
An investigation is described of the influences of the internal phase and the emulsifier on the viscosity of an emulsion. Oil-in-water emulsions—all identical with one another in phase-ratio, external phase, type and concentration of emulsifier—were prepared with a variety of organic liquids as internal phases and a number of univalent soaps as stabilizers. The viscosities of the emulsions were measured at 20° C. and the active volume of the internal phase in each calculated.

The results show that (1) in emulsions of a particular oil in water stabilized by different soaps, the location of the minimum in the curve connecting emulsion viscosity and concentration of emulsifier, varies with the nature of the soap, and (2) in emulsions stabilized by a single soap but having different internal phases, the soap concentration producing the least viscous emulsions is different for different oils.

The active volume of the internal phase in an oil-in-water emulsion depends upon (a) the nature of the emulsifying agent except that where water-soluble soaps are used,

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it depends on the nature of the fatty acid radical but is independent of the basic radical, and (b) the nature of the oil used as the internal phase.

An explanation attributing the observed variations in viscosity to interactions between oil, soap, and water, is advanced. B. A. Toms. *J. Chem. Soc.* **1941**, 542-7.

Alkali and Chlorine Output

Chlorine production for 1941 reached a level about 20 per cent above that for 1940, caustic soda production increased about 13.6 per cent over 1940, and soda ash production about 15.6 per cent over 1940. Consumption of caustic soda by the soap industry increased from 103,000 short tons in 1940 to 125,000 short tons in 1941; consumption of soda ash by the soap industry increased from 225,000 short tons in 1940 to 260,000 tons in 1941. Chlorine was produced at about capacity rate in 1941. Production is estimated at about 725,000 tons, of which perhaps 605,000 tons were made electrolytically with caustic soda. *Chem. & Met. Engineering* **49**, 84-6 (1942).

By-product Soap Stock

Fat recovered as a by-product from wet-cooked chicken offal from heavy hens contained 0.05 per cent of moisture, 1.55 of fatty acids and 0.68 per cent of unsaponifiable matter; the titer was 32.3. Dry-rendered chicken offal yielded 4.6-8.1 per cent of oil and 22.4-23.1 per cent of meat scrap, the latter containing 8.9-9.6 per cent of fat. The oil offers possibilities as a soap stock. Geo. F. Stewart and Frank E. Mussehl. *Poultry Sci.* **20**, 450-3 (1941).

Oil Refining

Oil is refined by spraying an alkaline solution in the form of a mist into a mist of the oil or a thin film of the oil. Greater concentrations of the alkali can be used by this method than in kettle processes or in the known continuous processes. The saponification loss is less. Salt solution is used in breaking the emulsion. Anderson, Clayton & Co. British Patent No. 531,749.

Fatty Acid Extraction

Extraction of fatty acids from rosin acid-fatty acid mixtures by means of propane was studied. Solubility curves for oleic acid and abietic acid in propane were determined. Equilibrium diagrams for the ternary system oleic acid-abietic acid-propane show that when two liquid layers are formed, the ratio of oleic acid to abietic acid in the upper layer is always higher than in the lower one. By proper adjustment of the concentrations at 96.7° C., the fatty acid can be separated in a practically pure state. The data obtained on the ternary system can be applied to the design calculations for several different extraction methods. It appears to be an ideal system for extraction with reflux. Arthur W. Hixson and Arthur Norman Hixson. *Trans. Am. Inst. Chem. Engrs.* **37**, 927-57.

Soluble Silicates

Commercial sodium silicates, sold in many different forms, vary from the highly siliceous product having a ratio of $1\text{Na}_2\text{O}:3.9\text{SiO}_2$, to the highly alkaline product usually termed orthosilicate and containing 61.5 per cent Na_2O , 29.5 per cent SiO_2 and about 9 per cent of soda ash and water. Neither of these extremes are true compounds so cannot be given formulas. Impurities in the silicates are low and practically the same regardless of ratio. A typical analysis of the impurities in a sodium silicate solution is as follows:

	Per cent
Ferric oxide, Fe_2O_3	0.032
Titanium dioxide, TiO_2	0.039
Alumina, Al_2O_3	0.093
Lime, CaO	0.034
Magnesia, MgO	0.019
Chloride, Cl	0.025
Sulfur trioxide, SO_3	0.011
Carbon dioxide, CO_2	0.022
Total	0.275

The three alkaline silicates,—sodium metasilicate, $\text{Na}_2\text{SiO}_3 \cdot 5\text{H}_2\text{O}$ (of the three, the most important commercially), sodium sesquisilicate, $\text{Na}_3\text{HSiO}_4 \cdot 5\text{H}_2\text{O}$, and sodium orthosilicate, are the ones especially useful as detergents. These silicates have a marked buffering effect at a high pH, the metasilicate in 1 per cent solution giving a pH value of 12.3, the sesquisilicate 12.6, and the orthosilicate

12.9. These values are intermediate between those for the same concentration of caustic soda, which gives pH 13.2, and trisodium phosphate giving pH 12.0 in 1 per cent solution. The buffering effect of these silicates neutralizes acidity, at the same time keeping the cleansing action at a high pitch until the bath is nearly exhausted. They are high in emulsifying and deflocculating power. The very alkaline material, orthosilicate, is much too active for safe use in contact with tin or aluminum. C. H. Jeglum. *Chem. Industries* **49**, 440-5 (1941).

Oil Refining

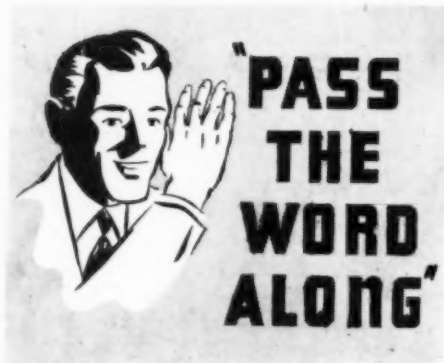
Animal and vegetable oils containing free fatty acids are refined by mixing in a closed system a stream of the oil with a stream of a solvent such as isopropyl alcohol containing 5-20 per cent of water, which is miscible with the free fatty acids but substantially immiscible with the oil. The resulting oil phase is separated from the fatty acid-solvent phase by continuous centrifuging, after which the solvent is vaporized from the fatty acid-solvent phase for re-use in the process. Benjamin H. Thurman, to Refining, Inc. U. S. Patent No. 2,260,730.

List Replacement Materials

Shortages of many raw materials call for substitution as well as conservation. Substitutes have been listed in the Textile War Manual for chemicals, fibers, metals and other materials. Some of the substitutes cannot be employed for all of the purposes served by the material they replace, but only for such purposes as suited to their particular properties. Many of the substitutes themselves are scarce but in general are more plentiful than the material they are intended to replace. Of interest among the chemicals are the suggested substitutes for chlorine of perborates, peroxides and sodium chlorite; for sulfonated oils or fats, cationic softeners; for gum tragacanth, methyl cellulose and vegetable gums prepared from domestic starches. *Textile World* **92**, No. 2, 82-3 (1942).

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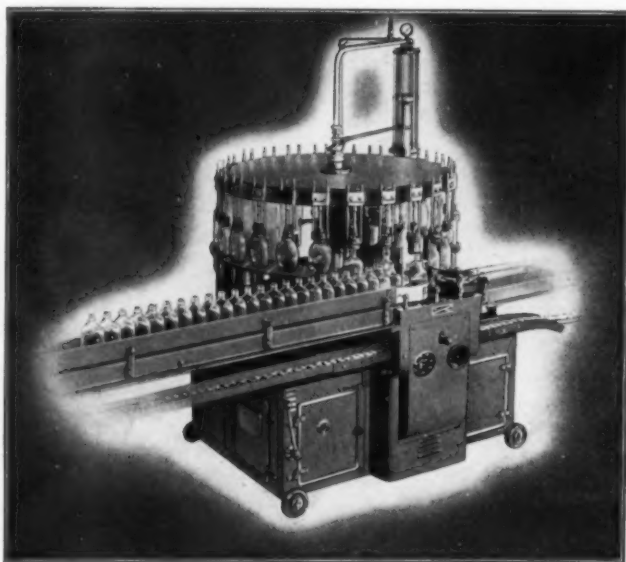
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PRODUCTS AND PROCESSES

Silicated Detergent

Finely divided solid alkali metal silicate having a low apparent specific gravity not exceeding 1 is caused to react with a soap-forming fatty acid in the absence of water and at temperatures below those producing the decomposition of the fatty acids. This results in the formation of a product containing at least 5 per cent of soap and a substantial proportion of alkali metal silicate. Joseph Crosfield & Sons, Ltd. British Patent No. 521,910.

New Use for Soap

A composition adapted to assist in the clarification by aeration of oil-in-water emulsions containing soluble alkaline-earth metal compounds such as the "ballast water" on ships, contains 1-5 parts each of an alkali metal or ammonium soap of a simple fatty acid, and of an alkali metal or ammonium soap of a saponifiable modified fatty acid such as the sodium soap of sulfonated castor oil. C. H. M. Roberts and R. V. Niswander, to Petrolite Corp., Ltd. U. S. Patent No. 2,260,757.

Shaving Cream Ingredient

Compounds suitable for use in shaving creams and as emulsifying and wetting agents are ethers of polyglycerols in which at least one hydroxyl hydrogen of the polyglycerols is replaced by a lipophile radical of at least six carbon atoms, and which contain at least one free polyglycerol hydroxy group. An example is monolauryl ether of diglycerol. Benjamin R. Harris. U. S. Patent No. 2,258,892.

Wool Washing Detergents

Aliphatic amines with a minimum of three carbon atoms and containing hydroxyalkyl radicals or double bonds are treated with sul-

fonating agents or with phosphoric acid esters to give products valuable for wool washing. H. Ulrich, J. Nusslein and P. Kording, to I. G. Farbenindustrie A.-G. German Patent No. 703,953.

Soap Composition

Soap is manufactured to contain 10-30 per cent of saturated fatty acids having more than 18 carbon atoms, at least 30 per cent of unsaturated fatty acids, and not more than 30 per cent of palmitic acid or of a mixture of palmitic and stearic acids. The proportion of the latter does not exceed 15 per cent of the total fatty acids in the soap. Any other saturated acids present are of lower molecular weight than palmitic acid. Lever Brothers & Unilever Ltd., Richard Thomas and Henry B. Oakley. British Patent No. 521,566.

Decolorizing Palm Oil

Palm oil or other similar oils are decolorized by treating with a small proportion such as 0.1 per cent of hypophosphorous acid or sodium hypophosphite at a bleaching temperature of 220-235° C. under vacuum. Carl N. Anderson, to Lever Bros. Co. U. S. Patent No. 2,259,968.

Soap Stabilizer

Biguanide or one of its substitution products is incorporated into soap to render it more stable. Robert L. Sibley and Monsanto Chemical Co. British Patent No. 521,863.

Soap from Marine Oil

Marine oil is hydrolyzed to produce a fatty acid mixture. The mixture is heated and then passed upward through zones of condensed fatty acids having successively lower boiling points. Vaporous low-boiling fatty acids are withdrawn substantially free of C_{20} and C_{22} acids. These

low-boiling fatty acids are condensed and part returned as reflux. The low-boiling fatty acids are saponified to produce a soap composition. The fraction used does not contain over 3 per cent of C_{20} - C_{22} acids. Armour & Co. British Patent No. 533,846.

Detergent Aid

Phosphoric acid is partially esterified with phenolic compounds to obtain acid esters which are in turn neutralized to form salts. The phenolic compounds used have as substituents in the aromatic nucleus alkyl or cycloalkyl groups. The mono- or di-esters contain in each molecule of ester 5-20 saturated aliphatic or alicyclic carbon atoms. The products are useful as detergent aids. Standard Oil Development Co. British Patent No. 533,327.

Composition for Soap Cakes

A condensation product of lysalbinic acid with palmitic acid is thoroughly mixed with an equal amount of anhydrous sodium pyrophosphate. An aqueous solution of sulfuric acid is added until the reaction mixture shows a pH of about 6. An aqueous solution of a mixture of cellulose ethers is then added until a kneadable mass is obtained which is shaped and dried. Max Nassau. U. S. Patent No. 2,260,123.

Aromatic Sulfonic Acid

Aromatic sulfonic acid derivatives are prepared by causing reaction of an aromatic compound with an aliphatic compound containing at least six carbon atoms. This is treated with a sulfonating agent with the organic material dissolved in a liquid consisting principally of liquid sulfur dioxide. The alkylated aromatic sulfonic acid is then neutralized. Robert L. Brandt, to Colgate-Palmolive-Peet Co. Canadian Patent No. 402,764.

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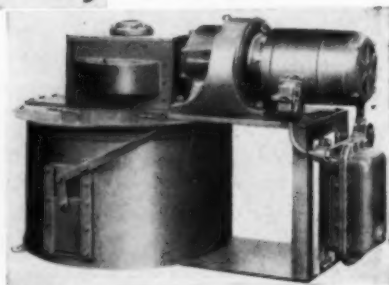
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Complete copies of any patents or trade-mark registration reported below may be obtained by sending 25c for each copy desired to Lancaster, Allwine and Rommel. Any inquiries relating to Patent or Trade-Mark Law will also be freely answered by these attorneys.

No. 2,271,378, Pest Control, patented January 27, 1942 by Norman Edward Searl, McDaniel Heights, Del., assignor to E. I. du Pont de Nemours & Co., Wilmington. A pest control composition useful for controlling economically harmful lower forms of life including bacteria, fungi, and insects, containing as an active ingredient a linear polymeric onium salt in which the multiply recurring linear polymeric unit comprises at least seven chain atoms, two of which are onium atoms of the class consisting of sulfur, nitrogen and phosphorus, separated by organic radicals attached to the onium atoms through carbon, one of the valences on each onium atom being satisfied by a radical being the anion of an acid and the remaining valences of the onium atom being satisfied by organic radicals attached to the onium atom through the carbon, not more than one of the carbons attached to the onium atom being in turn joined to another carbon by a multiple bond.

No. 2,271,408, Soap Product, patented January 27, 1942 by Benjamin H. Thurman, Bronxville, N. Y., assignor to Refining, Inc., Reno, Nev. As a product of manufacture, a composition of matter which comprises, alkali metal soap, a substantial amount of gums recovered from crude vegetable oils, a substantial amount of at least one alkali metal compound having an alkaline reaction in addition to any alkali present in the gums when recovered from the crude oil,

and an organic soap solvent miscible with water, the composition being stable against fermentation.

No. 2,271,619, Process of Making Soaps, patented February 3, 1942 by George Burt Bradshaw, Wilmington, Del., and Walter C. Meuly, New Brunswick, N. J., assignors to E. I. du Pont de Nemours & Co., Wilmington. The process which comprises reacting a higher fatty acid glyceride with a saturated aliphatic monohydric alcohol having less than 5 carbon atoms in the presence of a small amount of an alkali metal hydroxide under substantially anhydrous conditions, the hydroxide being added in an amount of 0.1 per cent to 0.5 per cent by weight based upon the glyceride and the amount of alcohol employed being not more than 1.75 equivalents of the glyceride.

No. 2,271,635, Dry Cleaning Composition, patented February 3, 1942 by Lawrence H. Flett, Hamburg, N. Y., assignor to Allied Chemical & Dye Corp., New York. A dry cleaning composition comprising an organic liquid of the dry cleaning type and a small amount of a dry cleaning assistant comprising an alkyl phenol sulfonate in which the alkyl radical consists of an alkyl hydrocarbon radical containing at least 12 carbon atoms.

No. 2,271,638, Germicide, patented February 3, 1942 by Howard L. Guest, Roseville, Calif., assignor of 75 per cent to L. A. Gunther, Robbins, Calif. A non-caustic germicide mixture for solution in H₂O comprising FeCl₃ and FeCl₂ in the ratio of one gram molecular weight of FeCl₃ to each two grams molecular weight of FeCl₂.

No. 2,272,044, Insect Repellent, patented February 3, 1942 by Roscoe H. Carter, Washington, D. C., assignor to Henry A. Wallace, as Secretary of Agriculture of the United States of America, and his successors in office. An insect repellent containing as its essential active ingredient di-morpholine thiuram di-sulfide.

No. 2,272,047, Insecticide, patented February 3, 1942 by Andrew F. Freeman, Boalusa, La., assignor to Henry A. Wallace, as Secretary of Agriculture of the United States of America, and to his successors in office. An insecticide containing as its

essential active ingredient 1, 4-diphenyl semicarbazide.

No. 2,273,860, Insect Repellent, patented February 24, 1942 by Philip Granett, New Brunswick, N. J., assignor to National Carbon Co., New York. An insect repellent composition which consists of an inert diluent and a repellent; the repellent consisting of at least one ester of a saturated aliphatic acid of the group consisting of a dicarboxylic acid having six carbon atoms to the molecule, a hydroxy dicarboxylic acid and a hydroxy monocarboxylic acid having an oxygen atom in ether linkage in the alcohol radical thereof when the alcohol radical contains not more than five carbon atoms.

No. 2,274,267, Insect Repellent, patented February 24, 1942 by Philip Granett, New Brunswick, N. J., assignor to National Carbon Co., New York. An insect repellent composition which contains one of the group consisting of dibutyl 1-malate, diethyl dl-malate, benzyl lactate, and tetrahydrofurfuryl lactate.

No. 2,274,476, Insecticide and Moth Larvae Repellent, patented February 24, 1942 by Ingeniu Hechenbleikner, Stamford, Conn., assignor to American Cyanamid Co., New York. An insecticide comprising symmetrical di-cyclohexyl guanidine.

No. 2,274,584, Soap Composition, patented February 24, 1942 by Hans Beller and John J. Owen, Baton Rouge, La., assignors to Jasco Inc. A laundry bar soap comprising a water-soluble, kettle-boiling soap obtained by saponifying a mixture of at least 50 per cent by weight of natural fats and at least 5 per cent by weight of fatty acids, manufactured by oxidizing solid paraffin hydrocarbons and having a boiling point range of from 150-280° C. at 8 mm. mercury pressure, a builder consisting of sodium silicate and sodium carbonate, and as a foam stabilizer at least 1 per cent sodium pyrophosphate.

British Soap Rationing

In connection with the soap rationing scheme recently initiated in England, all manufacturers of soap, including those who buy soap base and process it to other forms of soap, will require a license to carry on their business. All persons using soap in their business for purposes not connected with private households must obtain permits to enable them to buy supplies of soap, etc. Allocations of soap to all nondomestic buyers will be at the same rate as their consumption in the past six months. *The Chem. Age* 46, 92 (1942).

The WAR PRODUCTION BOARD *Orders:* NO MORE GLYCERIN IN SOAPS

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Oil and Fat Consumption (From Page 31)

Consumption during the calendar year just closed was only 29,753,000 lbs., as against 41,221,000 lbs. in the previous year.

The only other oil topping ten million pounds in the 1941 soap industry consumption figures was sulfur olive oil. Use by soap makers reached only 10,029,000 lbs. in 1941, a drop of almost five million pounds from the 1940 total. Another soap stock which continued to lose prominence was marine animal oil, consumption dropping to 6,889,000 lbs. in 1941, as compared with 19,250,000 lbs. in 1940 and 51,552,000 lbs. the

year previous. Again in 1941 consumption of palm kernel oil by the soap industry was practically negligible.

Mrs. George Lueders Dies

Mrs. Clothilde Kurtz Lueders, wife of the late George Lueders, founder of George Lueders & Co., New York, died on March 29 at her home in Summit, N. J. She was 75 years of age and had been in ill health for some months. Mrs. Lueders is survived by a daughter and two sons, both of the latter being associated with George Lueders & Co. Fred J. Lueders is president

of the company and George K. Lueders is assistant secretary. George Lueders founded the company in 1885 in New York and for many years was widely-known in the essential oil, soap and allied industries of the country. He died on May 4, 1933.

Bleach-making Unit

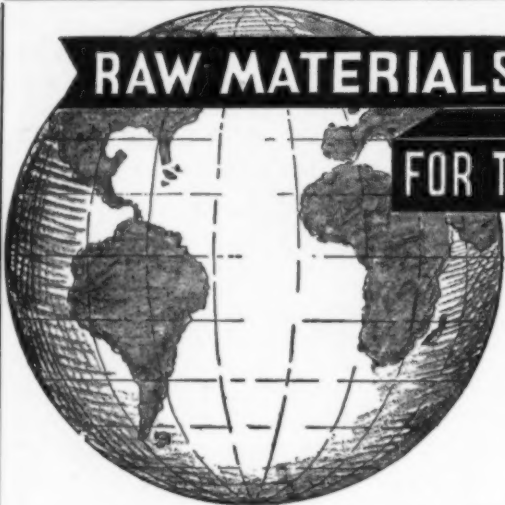
A machine for making bleach electrolytically has been announced by a division of the Embree Manufacturing Co., Elizabeth, N. J. The equipment is stated to be automatic and to produce a bleach of 2 per cent strength, starting with a saturated solution of common salt.

Factory Consumption of Primary Animal and Vegetable Fats and Oils, By Class of Products, Calendar Year 1941

(Quantities in thousands of pounds)

KIND	TOTAL	Shortening	Oleomargarine	Other Edible Products	Soap	Paint and Varnish	Linoleum and Oilcloth	Printing Inks	Miscellaneous Products	Loss (including oil in foots)
TOTAL	5,860,742	1,418,109	294,912	534,637	2,143,857	570,802	136,840	29,319	543,615	188,651
Cottonseed oil	1,443,602	888,733	149,991	311,569	3,010	196	.....	153	4,106	85,844
Peanut oil	114,300	81,905	2,209	18,102	597	.....	.....	.....	5,112	6,375
Coconut oil	637,970	22,069	29,786	54,156	484,124	919	.....	1	8,639	38,276
Corn oil	84,342	62	628	62,963	4,948	848	1	34	2,776	12,082
Soybean oil	463,686	215,967	75,634	47,976	24,737	41,594	7,666	255	23,445	26,412
Olive oil, edible	2,484	.....	.....	2,308	84	.....	.....	.....	92	.....
Olive oil, inedible	2,697	.....	.....	.....	555	4	.....	.....	2,138	.....
Sulphur oil or olive foots	10,618	.....	.....	.....	10,029	.....	.....	.....	589	.....
Palm-kernel oil	10,364	4	957	6,916	1,113	.....	.....	.....	70	1,304
Palm oil	278,487	86,486	4,991	1,670	129,871	.....	.....	1	*43,768	11,700
Babassu oil	38,977	.....	946	6,677	29,753	.....	.....	.....	54	1,547
Sesame oil	887	226	.....	293	304	.....	.....	.....	45	19
Rapeseed oil	12,054	.....	.....	.....	5	103	.....	.....	11,928	18
Linseed oil	539,362	.....	.....	.....	2,278	373,745	110,236	23,547	28,423	1,133
Tung oil	54,008	.....	.....	.....	.....	48,825	1,896	2,960	327	.....
Perilla oil	7,024	.....	.....	.....	.....	5,408	340	831	445	.....
Castor oil	89,920	.....	.....	.....	1,976	44,240	1,295	760	41,643	6
Other vegetable oils	23,723	93	.....	3,524	1,162	13,690	723	89	3,912	530
Rendered pork fat	49,641	45,550	.....	3,979	1	.....	.....	.....	.....	111
Lard	18,606	5,237	8,298	4,724	88	.....	.....	13	37	209
Edible animal stearin	31,473	23,103	3,057	4,817	70	.....	.....	.....	391	35
Oleo oil	20,408	1,282	18,415	77	189	.....	.....	.....	433	12
Tallow, edible	53,001	41,227	.....	4,886	4,826	.....	.....	4	1,936	122
Tallow, inedible	1,190,542	.....	.....	.....	1,057,303	364	1	10	131,364	1,500
Grease	470,214	.....	.....	.....	310,487	150	.....	472	157,991	1,114
Neat's-foot oil	7,224	.....	.....	.....	35	37	.....	.....	7,139	13
Marine mammal oils	18,097	.....	.....	.....	6,889	26	.....	10	11,172	.....
Fish oils	187,031	6,165	.....	.....	69,423	40,653	14,682	179	55,640	289

*Includes 42,059 thousand pounds consumed by the tin andterne plate industry.



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868—Soap Powder Dispenser

American Dispenser Co., New York, has just put on the market a new dispenser for soap powder which is designed to dispense any grade of soap powder, beads, pumice, or mechanics soap. The new "Powdurn" dispenser is of the push-in type, is equipped with an all metal globe, and is said to be moisture proof.

869—Insect Pest Control

The story of the more common types of insect pests and the manner in which they are controlled is told in simple, concise language in a new bulletin of Sinclair Refining Co., New York, entitled "Insect Pests and Their Control." House fly, mosquito, cockroach, ant, flea, lice, silverfish, clothes moth, stable fly, and horn fly are covered in the 24-page bulletin. Description of liquid insecticides, the Peet-Grady method, and U. S. Department of Commerce standards for household insecticides are also included.

870—A.I.F. Bulletin

The Agricultural Insecticide & Fungicide Association, New York, has just issued a 12-page bulletin describing its purposes, activities and objectives. Officers of the association and members of the various committees working on special projects are listed.

871—New Indicator Paper

A novel form of test paper, which indicates the strength of wash water in a dishwashing ma-

chine, is currently being distributed by Mathieson Alkali Works, Inc., New York. The paper, known as "Super-Mafos" test paper, is supplied in small perforated sheets bound in booklets, each sheet being white with a band of deep pink printed across the center for comparison with the final color of the indicator paper.

872—Speech Award

The address on "Synthetic Thinking" delivered by Percy C. Magnus, president of Magnus, Mabey & Reynard, New York, at a recent dinner of the Association of Manufacturers of Confectionary and Chocolate of New York state, has been selected by the magazine *Vital Speeches*, as one of the ten best speeches delivered on current affairs in February. Copies are available.

873—Synthetic Palm Acid

"Palmalene," a new synthetic palm fatty acid of medium titre, has just been brought out by The Beacon Co., Boston, in commercial quantities. Specifications are: saponification number, 180-185; iodine value, 55-60; titre, 35° C.

Fritzche Man Heads New Club

George R. Fellows, southeastern representative for Fritzche Brothers, Inc., New York, has just been elected president of the newly formed Atlanta Drug & Chemical Club, an organization for men holding executive positions and special representatives of drug and chemical firms or allied industries.

Java Citronella Oil

(From Page 30)

ful cases the refractive index of 1 ml. of water that has been shaken with 10 ml. of oil is determined.

Specific gravity, refractive index, and optical rotation should be

determined in the usual manner. In the case of normal distillates, the specific gravity and the refractive index decrease as the percentage of citronellal increases.

Physico-Chemical Limits

IT must be borne in mind that the constants of the physical and chemical properties of Java oil have changed during the course of years because of the great expansion of the plantings to different regions, soils, climates, and altitudes which, of course, affected the resulting oil. Moreover, Java citronella has in recent years been primarily a product grown, harvested, and distilled by natives and small producers in contrast to the large well kept estates of years ago. The limits of the early literature must, therefore, be accepted with caution, the more so since analytical procedures had not been standardized at that time.

Gildemeister and Hoffman give the following as limits of the normal distillate (1929):²⁰

Specific Gravity at 15° C.: 0.885 to 0.901; Oils with high citronellal content sometimes show gravities as low as 0.881.

Optical Rotation: Laevo, to -4°; Occasionally an oil will be dextro-rotatory, to +1° 47'.

Refractive Index at 20° C.: 1.463 to 1.475.

Solubility: Clearly soluble in 1 or 2 volumes and more 80% alcohol; sometimes upon dilution the solution will show an opalescence.

Total Geraniol: Not less than 85% for a good oil and occasionally as high as 96%.

Actual Geraniol: 26.6% to 45%.

Citronellal: 25% to 54%. Good oils about 40% or more.

Color: Colorless to light yellow.

We consider the value of 40 per cent for citronellal content (for a good oil) given by Gildemeister and Hoffmann, somewhat high. According to our observations, a good commercial oil should show a citronellal content not less than 35 per cent.

Java citronella oils received by us during the last five years have fallen within the following limits:

Specific Gravity at 15° C.: 0.887 to 0.895.

Optical Rotation: -0° 35' to -5° 6'.

Refractive Index at 20° C.: 1.4685 to 1.4728.

Solubility at 20° C.: Clearly soluble in 1 volume 80% alcohol; opalescent in 10 volumes.
Total Geraniol: 82.3% to 89.4%, very seldom below 85%.
Citronellal: 28.8% to 43.9%, very seldom below 35%.
Color: Pale yellow to yellow.

In connection with the physico-chemical properties of Java citronella oil, it should prove of interest to mention the work of Hofstede.²¹ From a careful examination and analysis of a pure oil obtained by a special exhaustive distillation, Hofstede in 1932 concluded that the composition of the best sereh oil as it supposedly occurs in the grass itself, would be approximately as follows:

Specific Gravity at 27° C.: 0.879.
Optical Rotation at 28° C.: -2° 34'.
Refractive Index at 27.5° C.: 1.4654.
Solubility: Clearly soluble in 2.5 volumes 70% alcohol and more to 7.5 volumes; cloudy with more. Clearly soluble in 1.5 volumes 80% alcohol and more. Miscible with 90% alcohol.
Total Geraniol: 88.8%.
Actual Geraniol: 36.0%.
Citronellal: 42.7%.

The government report "Essential Oils of the Netherlands Indies" gives the following limits for pure oils based upon numerous analyses by the government laboratories:

Specific Gravity at 15.5° C.: 0.885 to 0.895.
Optical Rotation: 0° to -3°.
Refractive Index: 1.468 to 1.472.
Total Geraniol: 80% to 92%.
Citronellal: 35% to 46%.

Because fractions rich in a particular constituent are sometimes collected separately in order to obtain the so-called "special distillates," this government report recommends that oils be purchased and sold with guarantees in respect to both citronellal content and total geraniol content.

Shipping of Java Citronella

Since the production of citronella oil has been concentrated mainly in the western part of Java, Batavia has always been the center of the trade. Ninety-five per cent of Java's citronella oil has in the past been shipped from Tandjong Priok, the balance from Sourabaya and Cheribon.

Citronella oil is usually packed in galvanized iron drums containing 100 to 250 kilos, sometimes in tins of 16 kilos.

Uses of Java Citronella

In its original form, Java citronella oil is used for the scenting of soaps, insecticides, varnishes, disinfectants, spraying liquids for theaters and households, shoe polishes and numerous technical preparations. In all these the Java oil can easily replace the Ceylon oil. The great demand for citronella oil, however, is not caused by employment as such but because of the favorable proportions in which the important constituents, especially citronellal, occur in the oil. Oils fulfilling the requirements of Contract "A" are mainly used for the manufacture of aromatics. In this respect the Ceylon oil, with its citronellal content of 7 to 10 per cent, cannot compete with the Java oil. The Java oils falling under Contract "B," on the other hand, serve mainly for technical preparations and in such capacity form the strongest competition for the Ceylon oil. The Ceylon oil, aside from its low citronellal content, suffers from the deep rooted and unfortunate practice of adulterating with kerosene. It is generally sold not under a guarantee of purity but of solubility which merely puts a limit to the degree of adulteration.

Influence of Metals

R. E. Meyer²² investigated the influence of various metals upon Java citronella oil and came to the conclusion that zinc has the most injurious, aluminum and tin the least harmful influence upon this oil. The same author showed in a second series of experiments that at 100° C., iron is most, copper and nickel less, and aluminum least attacked by the oil. This investigation seems to give interesting hints in regard to the choice of metals in stills, condensers, shipping drums and storing tanks.

Formosa Citronella Oil

Years ago Japan used to be an important buyer of Java citronella

oil but exports from Java to Japan dropped considerably in 1937, perhaps because of the Chinese war and perhaps also for the reason that Japan started producing citronella oil in Formosa. During his visit to Japan in 1939, the writer inquired about this venture and found that as a matter of fact Japan has made considerable effort to develop an essential oil industry in Formosa. At that time it was expected that Formosa during 1939 would produce about 100 tons of this oil, most of which was, of course, intended for home consumption and for the manufacture of synthetics in Japan. How much present war conditions and priorities have curtailed Japan's program is hard to judge.

According to the information obtained by the writer, citronella oil is distilled from dry grass with a yield of about 0.5 per cent. The main harvests are in April and October. Analysis of a sample showed a very good quality in regard to odor as well as physical and chemical properties.

Specific Gravity at 15° C.: 0.886.
Optical Rotation: -2° 22'.
Refractive Index at 20° C.: 1.4673.
Total Geraniol Content: 87.4%.
Citronellal Content: 45.0%.
Solubility at 20° C.: Soluble in 1 volume of 80% alcohol; opalescent in 4 volumes and more.

Guatemala Citronella Oil

During the last few years Guatemala has become quite an important producer of citronella oil closely resembling the Java type. The quality of the Guatemala citronella oil is very high because all of the oil is produced on two large estates which, under the same proprietorship and management work according to advanced principles of agriculture and engineering.

²² *Chem. Weekblad*, 32 (1935), 405.
²³ Private communication from D. R. Koolhaas.
²⁴ According to an earlier description of the official method (given in the government report, *Essential Oils of the Netherlands Indies*), 0.5 N alcoholic KOH is used for this saponification, the excess alkali being titrated with 0.5 N HCl. This, however, represents but a minor variation.
²⁵ *Indische Mercur* 55, (1932), 277.
²⁶ *Ibid.* 58, (1935), 429.
²⁷ Private communication from D. R. Koolhaas.
²⁸ *Chem. Weekblad*, 31 (1934), 132.
²⁹ Private communication from D. R. Koolhaas.
³⁰ *Die Aetherischen Oele*, Vol. II, p. 364 (3rd Ed.).
³¹ "Citronellaolie," *Mededeelingen van de Afdeling Nijverheid No. 4 Buitenzorg*, Archipel Press, 1928, Chapter IV.
³² *Deutsche Parl. Zeitung* 17 (1931), 434.

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1942

Weather Proving Grounds ...Part of National's Research On Coatings

The investigation of protective and decorative coatings for containers forms an important part of research laboratory activity. New materials are being developed constantly and these materials must be thoroughly tested with respect to the functions they should serve. The Chemical Division is continually in touch with all the new developments produced by the coating material manufacturer and these new developments are investigated as they become available. Many problems arise which require the use of special coating materials and special methods of application to provide a coated container to serve a particular purpose. To meet these problems the sources of coating materials must be consulted, their recommendations obtained, and then the recommended coatings tested both in the laboratory and under actual commercial production conditions.

The investigation of coating materials involves the application and proper baking of the materials and fabrication, storage and resistance tests. These tests often require

extensive packing and processing tests under conditions similar to actual cannery practice. Storage tests are carried out under normal and also under unusually severe conditions.

The accompanying photograph shows one type of outdoor exposure test used to determine the comparative resistance of exterior can end finishes to extremely severe conditions.

At the present time, due to shortages of tinplate which increase the requirements for enameled steel, the increase in the number of special problems raised in relation to defense work, and actual shortages and necessities for replacement of coatings due to priorities, the research activities of the laboratory concerned with protective coatings have been greatly increased. By means of increased activity and study the serious problems raised will be met and solved to provide satisfactory protective coatings on containers which must be produced during the present emergency. RESEARCH IS ORGANIZED THINKING. (100)

The photograph illustrates a type of outdoor exposure test used to compare the resistance of coatings to weathering conditions. Can ends are fabricated from coated stock, double seamed on cans and placed on a rack exposed to natural outdoor conditions, such as sun, rain, and daily variations in humidity. The behavior of coatings under these conditions is followed by continual observations for breakdown.



Gelatin Coated Meats

A staff of laboratory technicians at the Quartermaster Corps has developed "defense" hams and bacon — special gelatin-coated meats cured in about half the ordinary time. The gelatin coating holds the flavor and helps preserve the meat, it is declared. These new processes may affect for the better Americans' dietary habits long after the emergency has passed, it is stated. (101)

New Fruit Juice Blend for Canning

During the past year, several noteworthy blends of fruit juices have been perfected for canning by the Agricultural Experiment Station at Geneva, New York. In addition to Apple-Raspberry Juice, which was given consumer tests, blends of Plum-Apple Juice and Cherry-Apple Juice have been developed.

Since better color and flavor, as well as

yield, are attained, the juice is prepared from frozen berries and blended with freshly pressed apple juice. Like apple juice, it is not clarified but is de-aerated and flash pasteurized at 170 to 175 degrees.

It has been observed that the change or darkening in the color of apple juice after pressing is related to change in flavor and to the degree of sedimentation in the juice. By rapid handling of juice, the original flavor and color are retained and very little sediment is formed in the pasteurized juices. The studies on fruit beverages, such as cherry cocktail, peach juice or nectar, blends of strawberry, rhubarb, and others, are being continued.

Particular attention is being given to the blending of vegetable juices, such as those from celery, carrots, and beets with sauerkraut juice, enough of the latter being added to raise the acidity in order that low temperature flash pasteurization may be used. By using low pasteurization temperatures rather than pressure cooking, more of the original quality of the vegetables is retained. (102)

Research for Camouflaging

For some time chemists in the United States have been working on a type of paint that would absorb light and not reflect it. The purpose of this research is to develop a coating suitable for camouflaging concrete highways leading to important industrial centers, bridges, oil tanks and other objectives. (103)

Soap Notes

New grades of American pumice have been made available to hand soap manufacturers to replace ingredients which were formerly imported, supplies of which have now been cut off because of the war in Europe.

Experimental work is proceeding on materials to be added to toilet soap which will render the soap antiseptic and germicidal while at the same time having no unfavorable effect on such other properties as color, odor, etc.

Revised specifications are being considered for U.S.P. Soft Soap for the new edition of the U. S. Pharmacopoeia. The principal change is a liberalization of the formula, allowing for the use of other oils than linseed. (104)

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APRIL

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1942

Vitamins From Tobacco

Scientists of the U. S. Department of Agriculture predict that thousands of acres in the nation's tobacco land may be put to work producing a special kind of tobacco, *Nicotina Rustica*, as a source of nicotinic acid, the pellagra-preventing member of the vitamin B complex. Chemists at the new Eastern Regional Research Laboratory in Philadelphia are working to perfect the use of nicotine for making the vitamin product at a cost competitive with the coal tar source. They say that if only nicotine were used in making all the nicotinic acid required this year in the United States, it would take from 17 to 20 million pounds of tobacco. (105)

Sunflower Oil For Varnishes

Promising results are reported in the production of alkyl varnishes with raw sunflower oil instead of linseed oil. (106)

Soy Bean Shortening

Of the more than 400 million pounds of soy bean oil produced last year, more than half went into the production of vegetable shortenings. Because of the prospects for large exports of lard to Europe in 1942 and the expansion of demand for soy bean oil from other consumers, the department of agriculture has set a soy bean production goal for next year 18 percent above present levels. (107)

New Talc Deposits

Large new deposits of talc have been found in the U. S. and Canada and are being operated to replace talc previously imported from Italy, India, Manchuria, etc. A deposit in Newfoundland will soon be mined and processed. Cosmetic powders, containing talc, are valued at more than twenty-five million dollars annually at wholesale prices. (108)

Canada Cans Apple Juice

Because of the declining market for fresh apples, growers of the Okanagan Valley in British Columbia are processing and canning apple juice. About 300,000 gallons of the juice will be put on the market this year.

New apple products have also been developed. These products include "Fruit Coffee" produced in a form resembling coffee in appearance and taste, and "apple powder". Loss of the apple export trade in Western Canada, amounting to about 50 percent of the total annual pack of apples (about 5,000,000 boxes) has made these new outlets for the surplus important. (109)

Ventilation For Good Paint Jobs

Lack of proper ventilation sometimes causes paint to peel from barns. Formerly barns were loosely constructed and the moisture given off by the animals was almost immediately carried away. With the tightly constructed buildings of today it is important to make sure there is proper ventilation to remove this excess moisture. (110)

Red Bread

Red bread—colored by tomato juice—is being made experimentally by the Army. The added ingredient increases vitamins in the bread—especially Vitamin A, which helps prevent night-blindness. It is the vitamin night-flickers in England are reported to be using to increase their sight in the darkness. (111)

Asparagus For Insulating

The tough ends of asparagus stalks are being studied by research men as a raw material for defense products. Research men say experiments have indicated that asparagus stalk fiber is a good insulating board material. Disposal of the stalks has been a serious problem for canners in California. (112)

Canned Smoked Salmon

A new item in canned fish is making its appearance on the San Francisco market in the form of canned smoked salmon. Choice salmon is first smoked and then packed in quarter-pound flat tins, like sardines, with use being made of sesame oil. (113)

Tires From Molasses

We may yet ride on molasses tires, according to one of Akron's synthetic rubber specialists. He reports that it is perfectly possible to make passenger-car tires from synthetic rubber produced from molasses and that he himself used molasses as a source of synthetic rubber in his early research on that product. (114)

Technical Topics

A COMPLEX SODIUM-IRON PYROPHOSPHATE is suggested for use in the mineralization of foodstuffs. The compound, it is stated, makes iron readily available, yet holds it in a chemically combined form whereby it has no deleterious effect on the foodstuff. (115)

A SOLUTION OF CHLORINATED RUBBER, containing dibutyl phthalate and a bactericide, has been found of value for the preservation of the cordage used in sea-fishing nets, according to Canadian investigations. (116)

TETRAMETHYLTHIURAM DISULPHIDE has been found an effective agent for the control of brown patch and other turf diseases in recent investigations. Application at the rate of four ounces for each 1,000 square feet was found to afford complete control of various diseased conditions. (117)

NICOTINIC ACID CONTENT determination in foodstuffs and similar products by a new colorimetric method is described in recent British literature. In the simple method described, small quantities of the acid are determined indirectly by precipitation with phosphomolybdic acid and reduction of the nicotinic acid-phosphomolybdate complex with stannous chloride. (118)

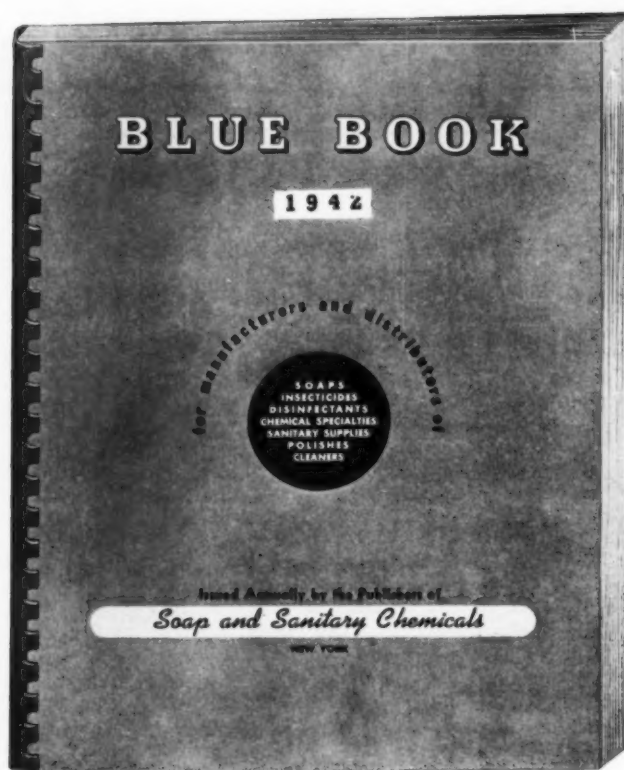
CONTRARY TO GENERAL BELIEF, the caffeine and theobromine content of coffee, cocoa and other foods has no harmful effect upon consumers. Studies made by a well-known scientist show that practically every person consumes caffeine and theobromine containing foods and beverages very frequently and consumes appreciable quantities of caffeine and theobromine with no noticeable bad effects. (119)

HYDRATED MONOCALCIUM PHOSPHATE has been found of value as a coating agent for the acid constituent of baking powders in that it retards the speed with which the acid reacts with the soda bicarbonate during dough mixing. An over-rapid reaction causes much of the carbon dioxide gas to be lost before the dough has reached a point where the dough can retain the gas. Additional gas retained by the baked products tends to a larger volume, and increased lightness in such products. (120)

For further information on any of these articles write to National Can Corp., 110 E. 42nd Street, New York City. Please mention the number at end of article—also name of the magazine you saw it in.

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ments. And regular Hollingshead customers, we are certain, will bear witness to the success of these efforts to keep them supplied with necessary sanitation products.

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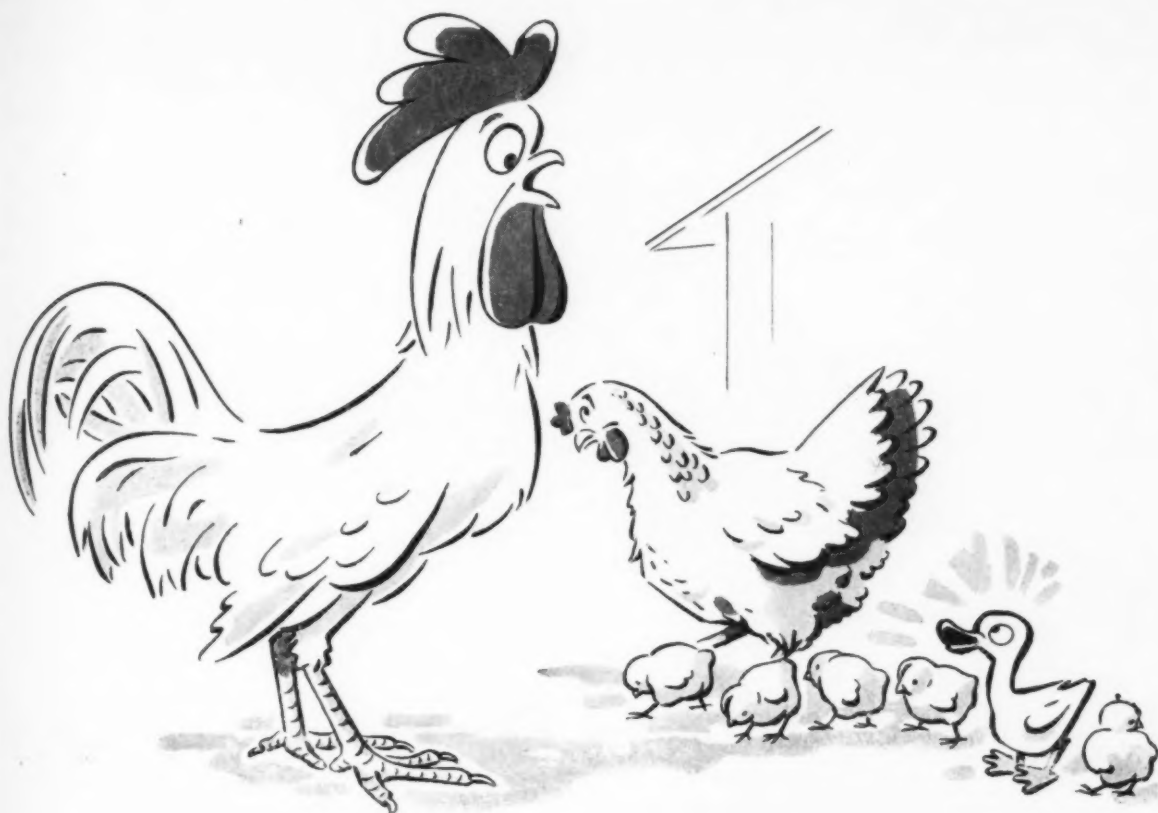
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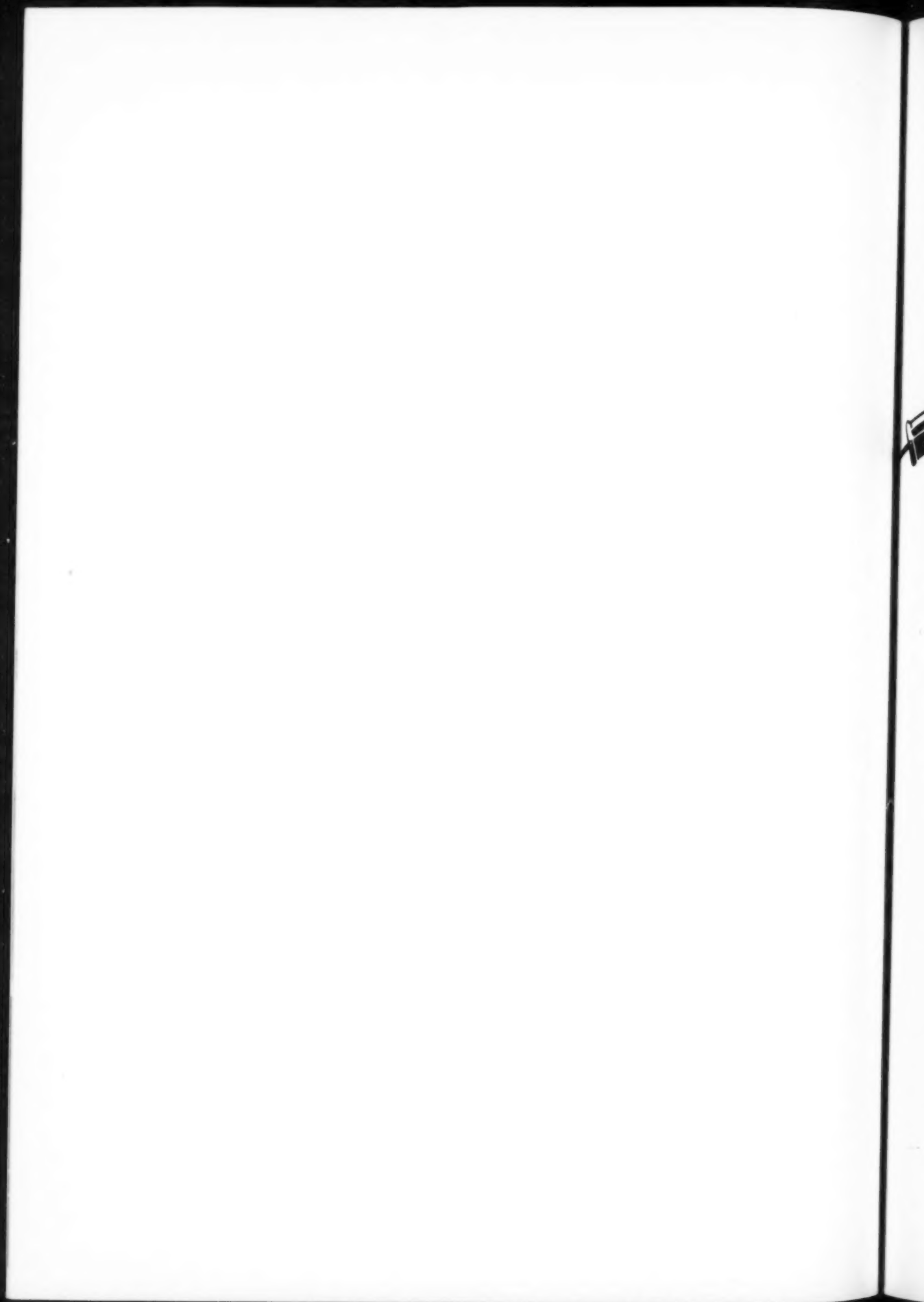
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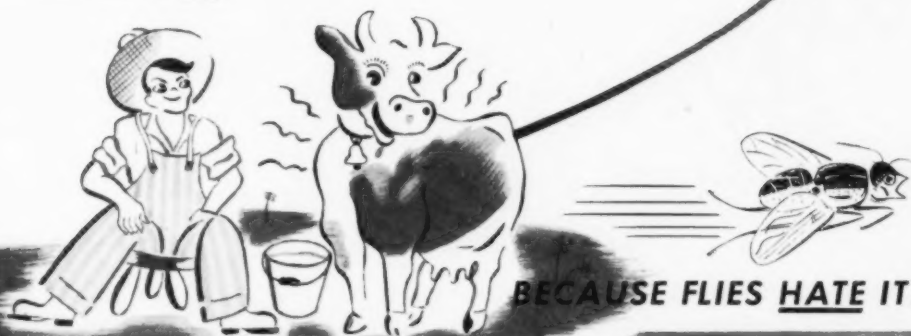
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A SECTION OF SOAP

Official Publication, Nat'l. Assn. of Insecticide & Disinfectant Manufacturers

BETWEEN a thousand and two thousand workers in a west-coast shipyard were laid up recently by an epidemic of a "mysterious eye infection." It was reported that a virus was found to be responsible for the malady "which like most infectious diseases, thrives in the presence of unsanitary conditions."

What disease does not thrive in the presence of unsanitary conditions? In this case, thousands of man-hours in vital war production were lost mostly by welders, those most-needed war workers. And this is the very point which the sanitary products industry has been trying to drive home hard in Washington, — a few gallons of disinfectant might have prevented such an epidemic from ever getting a start. It is the strongest argument in the world against any let-down in the maintenance of scrupulously sanitary conditions in plants making war materials. In the absence of sanitation and the materials necessary to maintain it, the possibility that entire industrial centers might be crippled by epidemics of one kind or another, is not altogether remote.



SODIUM fluoride and silicofluoride are still being offered around to pest control operators and insecticide manufacturers by little-known firms outside of the regular channels of supply for these chemicals. There are undoubtedly lots of these products of questionable quality kicking around on the fringe of the trade. The situ-

ation is much easier and there seems to be a trend to unload stocks on the part of these outsiders. Extreme caution in the purchase of any fluoride is still the part of wisdom. Don't buy from an unknown seller!



BECAUSE of the increased demand for certain types of coal-tar disinfectants for use in and about industrial establishments working on war orders, a manufacturer who sells these plants cleaning and other materials has asked for advice on how and where to arrange to manufacture a line of these disinfectants. He particularly wants to know where he can buy the necessary raw materials from which to produce phenolic disinfectants. The answer is that even those firms which have been producing coal-tar disinfectants for many years are obtaining raw materials only with the greatest difficulty and then in quantities much less than their full needs.

The chances of a new manufacturer without previous raw material contacts coming into this field now and operating with any degree of success, are very, very slight. As a matter of fact, the opinion has been expressed that some manufacturers already in the business may be forced to abandon disinfectants and concentrate on other products in their line, solely because of their inability to obtain raw materials. This is not the time for any manufacturer to even think about going into coal-tar disinfectants.

SODIUM FLUORIDE

IT HAS been generally accepted that sodium fluoride acts as a stomach poison to roaches, the insecticide being ingested during the cleaning processes. Shafer (1915) suggested that traces of sodium fluoride were swallowed by the American roach, *Periplaneta americana* L., during the cleaning processes. That sodium fluoride acts as a stomach poison to the American roach has been demonstrated by force-feeding with dry powder (Shafer, 1915) and in solution (Sweetman, 1941). Marlatt (1915) and Mungler and Siegler (1937) have shown that roaches tend to avoid food poisoned with sodium fluoride.

It has been shown by Shafer (1915) and Hockenyos (1933) that sodium fluoride does penetrate certain portions of the integument of the American and Oriental (*Blatta orientalis* L.) roaches, but both concluded that the absorption was so slight that in control practice the roaches would have to secure some poison by ingestion to be killed. Later, Hockenyos (1939) investigated the influence of various non-poisonous chemicals when injected into the body cavity or used as diluents with sodium fluoride on the rate of absorption of poison through the integument of the American roach. He concluded that the integument of this roach exhibited the properties of a semipermeable membrane. Sweetman (1941) demonstrated that American roaches were readily killed by the contact action of both sodium fluoride and arsenicals, by sealing the mouthparts so that the roaches were unable to ingest the poisons. Earlier O'Kane and Glover (1935) had demonstrated that arsenic enclosed in wax cells attached on the thorax of American roaches penetrated the integument

and killed the roaches. Laudani and Sweetman (1941) tested the effectiveness of various dust insecticides against the American and German (*Blattella germanica* L.) roaches, when applied as dusts on the roaches or upon surfaces which they would walk or run over.

The purpose of this study with roaches was to gain further information on the following points: (1) the toxicity of sodium fluoride at the gut; (2) the repellency of sodium fluoride in or on food; (3) the ingestion of sodium fluoride during the cleaning processes; and (4) the importance of contact action of sodium fluoride in control.

Method of Procedure

The methods of preparing the roaches for the tests and applying the external applications of the poison are fully described by Sweetman (1941) and Laudani and Sweetman (1941). The internal injections were made directly into the digestive tract through the mouth with a hypodermic needle. A No. 26 needle was filed to form a blunt rounded point. Some of the roaches were chilled to increase ease of handling. The needle was placed in the mouth as far as the pharynx and then so adjusted that the oral cavity was in line with the oesophagus. The needle was gently pushed into the oesophagus and the

dosage administered. Several of the roaches were dissected immediately after injection to determine if any mechanical injury resulted and whether the solution was being retained in the alimentary tract. No apparent mechanical injury was observed and in every case the gut was inflated by the injected solution. One-fourth c.c. of solution was injected into each roach. Occasionally the roaches regurgitated some of the solution as they recovered from chilling.

Stomach Action of Sodium Fluoride on Roaches

Since it has been shown experimentally with a few roaches only (Shafer, 1915; Sweetman, 1941), that sodium fluoride acts as a stomach poison, further data are presented here. Measured dosages were injected into the gut of a number of adult American roaches (Table 1). Heavy dosages poisoned the roaches very rapidly; so rapidly that chilled roaches receiving dosages of 0.01 of a gram of sodium fluoride were killed without regaining their feet. Chilling speeded the action of the poison, suggesting that absorption from the gut was more rapid when chilled or possibly that elimination was greatly reduced. Roaches receiving dosages of 0.000078 grams or less of sodium fluoride showed no evidence of illness and were still normal after 10 days.

- - - a study of its
Toxic action on roaches
indicates that it is of
little value as a stomach
poison in practical control

Therefore the minimum lethal dosage for adult American roaches lies between 0.000156 and 0.000078 grams of sodium fluoride. Check roaches injected with distilled water were normal after two weeks.

The detailed responses of a few roaches treated with injections of poison and distilled water are shown in Table 2. The chilling did not appear to be injurious, since chilled roaches seemed to be perfectly normal in about 15 minutes. They usually regained their feet in 7 to 10 minutes. Unchilled roaches injected with distilled water appeared normal when released.

No evidence of stomach action of sodium fluoride was obtained from placing the poison on food. Several foods dusted with sodium fluoride were offered to the roaches. They not only refused to eat the poisoned food but avoided it, although portions of the same food without poison were readily eaten when offered. After remaining in cages with poisoned food for one week, none of the food had been eaten and the roaches appeared normal.

Contact Action of Sodium Fluoride

A NUMBER of American and German roaches were treated with sodium fluoride by permitting them to run through a runway that had been dusted with sodium fluoride, thus allowing the roaches to become exposed to the poison through their own efforts. The American roaches are very active in removing the poison from their bodies with the aid of their mouthparts (Figures 1-3). This re-

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and
Hamilton Laudani

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Table 1. The lethal effects of injections of sodium fluoride into the digestive tract of roaches, *Periplaneta americana* L.

Grams of sodium fluoride in 100 cc. of distilled water	Grams of sodium fluoride injected	Time to kill Minutes	Number of roaches	Pre-treatment of roaches
4	0.01	2	1	Chilled
4	0.01	7	1	Normal
2	0.005	8	1	Chilled
2	0.005	82	1	Normal
1	0.0025	30	1	Chilled
1	0.0025	44	1	Normal
0.5	0.00125	76	1	Chilled
0.5	0.00125	63	1	Normal
0.25	0.000625	250	1	Chilled
0.125	0.000313	270	1	Chilled
0.125	0.000313	290	1	Chilled
0.0625	0.000156	195	1	Chilled
0.0625	0.000156	250	1	Chilled
Survived 10 days				
0.03125	0.000078	...	2	
0.01562	0.000039	...	2	
Distilled water	1/4 cc.	...	4	

moval and possible subsequent ingestion of poison can be prevented by sealing the mouthparts. The mouthparts of half of the roaches tested were sealed with Ambroid cement before exposure to the poison. Both species of roaches tended to avoid the poison at first. The antennae during exploratory movements soon became contaminated with sodium fluoride, after which the roaches showed little ability to detect and avoid the poison. The roaches often stand higher on their legs, thus raising the body further away from the poison in passing over the dusted surfaces. This offers some protection as less poison comes in contact with the body and adheres to it. The smaller German roach can

walk or run over a poisoned surface and have less poison per body size adhere to the body than the heavier American roaches.

American roaches with sealed mouthparts were more readily killed with sodium fluoride than those with normal mouthparts (Table 3.) One roach, less than 5 per cent of the roaches with sealed mouthparts, survived, while 65 per cent of those with normal mouthparts survived the treatments. Further, the earliest deaths from sodium fluoride among those with sealed mouthparts occurred in about 15 hours, while about 45 hours was required for similar results among those with normal mouthparts. It is possible that those with

Table 2. The observed responses of American roaches, *Periplaneta americana* L., following injections of sodium fluoride into the digestive tract.

Pre-treatment of roaches	Injected with	Number of roaches	Minutes	Observations Responses
Chilled	NaF	5	0	On back
			5	Kicking violently
			10	Kicking reduced
			30	Occasional movement
			40	Rare movement
			60	All dead
Chilled	Water	2	0	On back
			5	Kicking
			7-10	On feet
			15	Normal
None	NaF	1	0	On feet
			5	On back
			15	Kicking violently
			20	Weak
None	NaF	1	0	On feet
			12	Violent contractions
			15	On back
			20	Weak
None	NaF	1	0	On feet
			30	Violent contractions
			33	On back
			35	Weak
None	Water	2	0	Normal

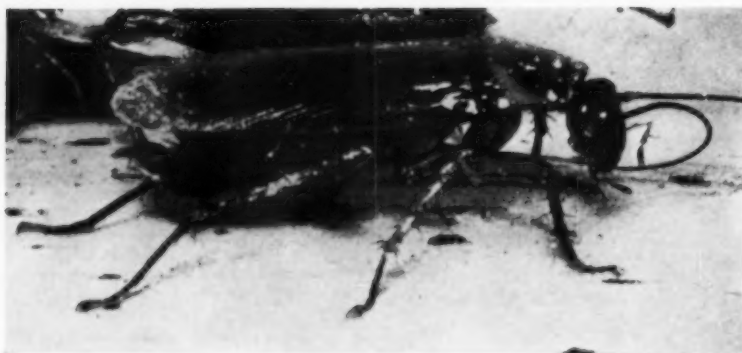


Figure 1. The American roach, "*Periplaneta americana*" L., cleaning sodium fluoride from its antenna with its mouthparts.

sealed mouthparts may tend to pick up more poison than normal roaches. The roaches with sealed mouthparts were killed in an average time of 40 hours, while those with normal mouthparts were killed in about 60 hours.

This shows that the roaches were killed by contact action of the poison and that where the mouthparts were normal the mechanical removal of the poison with the aid of the mouthparts did not result in sufficient poison being swallowed to speed the toxic action. In fact, observation showed that the poison dust was rapidly removed and accumulated in considerable quantities on the surface below the mouthparts (Figures 1-3). There was no evidence by observation indicating that any of the poison was swallowed during the cleaning processes. Unfortunately the chemical analyses that were planned to test this point conclusively were not completed, but the evidence warrants the belief that sodium fluoride kills roaches primarily by contact action and not by stomach action resulting from swallowing of the poison during the cleaning processes.

THE results with German roaches are given in Table 4. The roaches with sealed mouthparts were killed by contact action of sodium fluoride as readily as the American roaches. The number of hours necessary to kill the two species is strikingly similar, both being killed in an average time of 40 hours. The German roaches were noticeably less active in cleaning

themselves and removing the poison than the American roaches; at times little or no attempt was made to clean themselves. All of the German roaches with normal mouthparts exposed to the poison were killed, only a few hours more being required than for those with sealed mouthparts. Since these roaches made little effort to free themselves of the poison, this gives further evidence that little, if any, sodium fluoride is swallowed in the cleaning processes by roaches and that contact action is the primary, if not sole means, by which sodium fluoride poisons roaches.

An attempt was made to determine the amount of poison that adhered to the body of the American roach by weighing the insects before and after treatment. Roaches that were observed to have appreciable amounts of poison on their bodies often weighed less after treatment

Table 3. The effects of sodium fluoride on American roaches, *Periplaneta americana* L., after running through a runway dusted with the poison.

Mouthparts normal No. of roaches	Hours to kill	Mouthparts sealed No. of roaches
0	1-6	0
0	6-12	0
0	13-18	7
0	19-24	1
0	25-30	2
0	31-36	0
0	37-42	1
2	43-48	5
2	49-54	0
0	55-60	0
0	61-66	0
1	67-72	2
2	73-78	2
0	79-84	0
0	85-90	0
0	91-96	1
13	Survived 96 hours	1
Total	20	22
Check	..	3

Table 4. The effects of sodium fluoride on German roaches, *Blattella germanica* L., after running through a runway dusted with the poison.

Mouthparts normal No. of roaches	Hours to kill	Mouthparts sealed No. of roaches
0	1-6	0
0	7-12	0
5	13-18	6
0	19-24	0
0	25-30	0
0	31-36	0
3	37-42	1
0	43-48	0
1	49-54	1
0	55-60	0
0	61-66	3
0	67-72	0
0	73-78	0
0	79-84	0
1	85-90	0
0	91-96	0
0	97-102	1
0	103-108	0
0	109-114	0
0	115-120	0
0	121-126	0
0	127-132	0
1	133-138	0
0	Survived 138 hours	0
Total	11	12
Check	0	1
Check	1	Survived 138 hours 2

than preceding treatment. Occasionally this was due to dropping of feces. Frequently insects that became highly excited and active while being handled lost sufficient weight, probably as respiratory moisture, to offset the weight of the poison that adhered to their bodies.

Since weighing was not feasible, a five-point scale was used in estimating the amount of poison on the roaches from which the data were obtained for Table 4. All of the roaches were observed immediately after passing through the runway and most of them again after death (Table 5). Since most of the poison was on the legs and ventral side of the abdomen, it is possible that some of the poison was removed by the normal activities of the roaches in running about the observation cages. The roaches with normal mouthparts were much more active than those with sealed mouthparts. In general, the number of hours that passed between treatment and death is closely correlated with the amount of poison recorded as adhering to the body.

Discussion of Results

The experiences of the writers in practical control work strongly supports these results. Roaches were

Table 5. The relationship between the time required to kill and the amount of sodium fluoride observed on German roaches, *Blattella germanica* L.

<i>Amount of sodium fluoride observed on roaches</i>		<i>Hours to kill</i>
<i>When applied</i>	<i>After death</i>	
Mouthparts sealed		
Very much	Very much	18
Much	Much	18
Little	.....	66
Little	.....	66
Little	Very little	18
Very little	.....	66
Very much	Very much	16
Much	Much	16
Moderate	Much	16
Moderate	Much	49
Moderate	Much	40
Very little	Very little	98
Mouthparts normal		
Very much	Moderate	18
Much	Very little	18
Moderate	Very little	18
Moderate	Very little	18
Very little	.....	138
Very much	Moderate	40
Moderate	Much	16
Moderate	Little	40
Moderate	Little	49
Little	Very little	40
Little	.....	88

readily controlled or eradicated where the application of sodium fluoride as a dust, either pure or diluted with certain agents, is thorough and the treatment persistent. As long as the dust remains dry it is effective, but it cakes readily when moistened and then roaches, particularly the German roach, can run over it with impunity. Therefore, moist situations require more frequent treatment to control or eradicate infestations than dry environments.

Conclusions

Sodium fluoride is an active stomach poison in the gut of the American roach, *Periplaneta americana* L., but these roaches are repelled by food containing sodium fluoride. The American and German (*Blattella germanica* L.) roaches ap-



Figure 2. An American roach, "*Periplaneta americana*" L., cleaning sodium fluoride from its right middle leg (mesothoracic) with its mouthparts.

parently do not swallow a lethal dose of sodium fluoride during the cleaning processes after running over surfaces dusted with the poison. This justifies the conclusion that sodium fluoride is of little or no value as a stomach poison in the practical control of these pests.

Sodium fluoride definitely acts as a contact poison to the American and German roaches when dusted on them or adhering to their bodies after running over surfaces that have been dusted with the poison. Therefore, these results justify the conclusion that in the practical control of roaches, sodium fluoride is effective as a contact poison.

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Figure 3. An American roach, "*Periplaneta americana*" L., cleaning sodium fluoride from its right hind leg (Metathoracic) with its mouthparts.



A shoe sterilizer has been constructed on Sheppard Field, U. S. Army Air Corps school. An air-tight wooden cabinet built on wheels is designed to sterilize 45 pairs of shoes at one time. It is hoped by this means to prevent and eliminate cases of athlete's foot. The shoes will remain in the sterilizer with chemical vapor overnight. *Science Supplement* 95, Jan. 16, p. 12, 1942.

An emulsifier for petroleum sprays used for insecticidal purposes consists of the condensation product of coconut fatty acids with tetraethylene glycol. John W. Orelup. Canadian Patent No. 402,599.

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The Safety Factor in FLOOR WAXES

TESTING of floor waxes and other floor products from the point of safety is an idea which has had its birth only within the past 15 years or so. It is a type of testing actually still in its infancy,—but its importance is receiving growing recognition. Wax manufacturers are becoming more aware of the importance of safety against slip-hazard in their products, as observations over the last few years have indicated, and are turning out better products than ever before. There is still room for improvement, however.

No small part of the credit for the improvement in slip-resistance of floor waxes is due to the efforts and studies of the various casualty insurance companies in the United States. No group knows better the annual cost to the country in life, injuries, and money, of accidents due to slips and falls.

Falls constitute the largest single cause of accidents in the home, and the third largest cause of public accidents. In 1939, deaths from falls numbered about 25,800, or 28 per cent of the year's total for all types of accidents, ranking second only to deaths due to automobile accidents. And this does not count the many cases of broken legs, cracked skulls, shattered vertebrae, twisted ankles, sprains, and the like, which were not fatal.

Now of course all these accidents did not take place on waxed floors, nor could they all be traced to faulty floor maintenance. But insurance companies have recognized that floor waxes are a definite factor in accidents—and accident prevention. This is understandable for during the last five years, one company alone

A REVIEW OF TESTING PROCEDURE DEVELOPED BY INSURANCE COMPANIES FOR DETERMINATION OF SLIP HAZARDS

paid out nearly half a million dollars to accident policyholders for accidents due to falls on floors.

Consequently virtually every casualty insurance company in the United States has instituted in its inspection laboratory some method of testing floor waxes for slip-hazard. The methods they use vary widely, but the basic concept behind their tests is the same in every case: to reduce as much as possible accidents due to slips and falls by recommending approved materials.

Many devices have been used to measure coefficients of friction, but apparently every insurance company that has gone into testing of floor safety has felt that existing tests were not suitable for its purposes and so developed its own machine. The student of slip hazard is not particularly interested in measuring coefficient of friction *per se*; what he wants to know is how a particular floor surface is going to behave in actual use, and whether it will be safe to walk on. However, all existing methods of slip testing give results which undoubtedly can be correlated to true coefficient of friction, or are functions of coefficient of friction.

Space does not allow a review of all the various methods of measuring coefficient of friction, nor is it necessary to the subject at hand. Many methods of measuring coefficients of friction are not practical, for one reason or another, for use in testing slip-hazard. The inclined plane

method, for example, although it is probably the simplest of all, cannot be used on the floor itself, but is restricted to the laboratory. In methods where the movable surface is released from a static condition, errors result from the effect of inertia in starting. Methods depending upon the application of a measured force applied to one surface of definite mass to produce motion on the other surface also involve practical and serious objections. In certain methods where the movable surface is in motion at the beginning of the test, duplication of results is difficult. And so it goes.

How, then, have the various insurance companies solved the problem? What tests have they devised to overcome the above objections?

One of the most interesting, and apparently unique, measures of slip-hazard is employed by The Travelers Insurance Company of Hartford, Connecticut. The inventor of the test reasoned that most slips and falls on floor occur while a person is in motion. He was, consequently, not satisfied with the usual methods of slip testing in which the movable part of the apparatus is static or moving only very slowly at the beginning of the test. A former ice hockey player, he found his inspiration for the test he developed, and which is now used by the company, while watching a hockey game. The puck, sliding over the ice, gave him the idea of ejecting a small weight, under controlled conditions, over the surface of

the floor to be tested, and measuring the distance it slid. The more slippery the floor the further the weight would slide, and *vice versa*. And the distance it slid would give an accurate measure of slip-hazard.

The machine used by the Travelers inspection laboratory is based on this principle, and according to the company, measurements made by the machine are borne out completely by field reports on the action of floor products in actual use.

A diagram of the Travelers slip machine is shown in the accompanying figure. At the beginning of the test, the weight, (A), is suspended at the end of the double-armed pendulum, (G) which is pivoted at (C) and (C'). The pendulum keeps the weight at all times parallel to the floor. The weight is a steel disk, having a bottom surface about equal to the area of a man's heel, and weighing about two pounds. It is attached to the pendulum by a spring mechanism which can be tripped by a trigger. The actual test is performed as follows:

The weight is placed in position; the pendulum is brought to its initial position with its end 12 inches from the floor at (H). The operator releases the pendulum by pulling away support (D) which is pivoted at point (E), and the pendulum is allowed to swing, carrying the weight along arc (H-B), until it is in a vertical position. At (B) a trigger trips the spring mechanism holding the weight to the pendulum, and the weight is released, sliding freely across the test area of the floor until

it is stopped by friction. The final distance between the weight and point (F) is measured and the result recorded in inches. While the weight actually begins sliding at point (B), the final distance is measured to (F) for convenience. After each test, the contact surface of the weight is wiped free from any wax or dirt it may have picked up, and then cleaned with carbon tetrachloride.

It is noteworthy that the weight is released at a point slightly above the surface of the floor, approximately one-eighth inch, so that at the moment it makes contact with the floor, its forward motion is unimpeded. Another point requiring explanation, perhaps, is the material from which the weight is made. As originally constructed, the contact surface of the weight was of wood, as in the analogous part of most slip testing machines of other types, but it was found too difficult to clean effectively and to get consistent readings as the porosity of the wood introduced an uncontrolled variable. Thus an all-steel weight was adopted for the sake of accuracy and consistency.

The procedure for testing floor waxes at the Travelers laboratory is as follows: An area of flooring (linoleum), about 80 square feet, is prepared by washing thoroughly with a neutral cleaner. Two coats of wax are applied, one hour apart, in the afternoon. The test area is machine buffed the next morning, using a clean cloth to cover the brush of the machine. The floor is tested with the slip machine two days later; ten tests are

made in various directions and on various parts of the test area, and the results recorded and averaged. A small part of the test area is tested for water resistance by applying water and testing with the shoe sole and rubber heel, noting the behavior of the wax. The appearance of the wax after water has been allowed to stand until it has evaporated is also noted.

At various times throughout the entire test period, the floor is tested by scuffing and walking. After two weeks have elapsed since the wax was applied, the slip test and water-resistance tests are again performed. The floor is mopped lightly from time to time with a damp mop so that its appearance may be observed after mopping, and also to remove any dust which may have accumulated. After six weeks (total time) the slip and water-resistance tests are repeated.

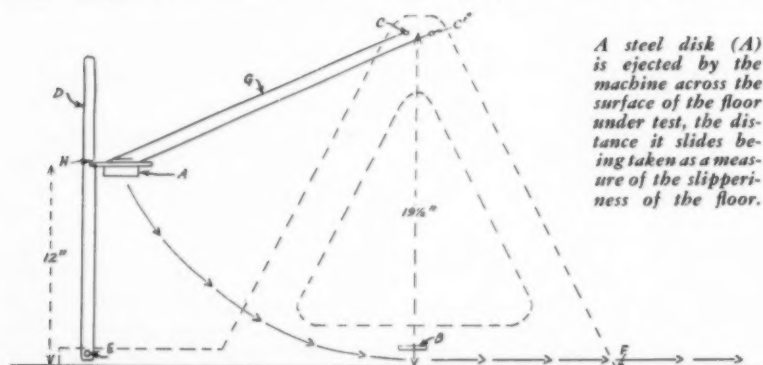
Then the floor wax under test is classed as either accepted or rejected. If its appearance and water resistance are satisfactory, the wax is accepted or rejected on the basis of the slip-test. Roughly, if the weight does not slide more than about 44 inches as its worst average test, the wax is accepted. It may show a better result in the slip test and be rejected for other reasons, however.

After a product has been found acceptable, it is put through a still more rigorous test. An entire floor of the Travelers office building at Hartford is waxed with the product, using methods prescribed by the manufacturer, or even allowing the manufacturer's representatives to apply the wax themselves, and in this way an opinion of the product under actual conditions of use is formed. The floor undergoes ordinary traffic and the reactions of the workers in the building are given consideration.

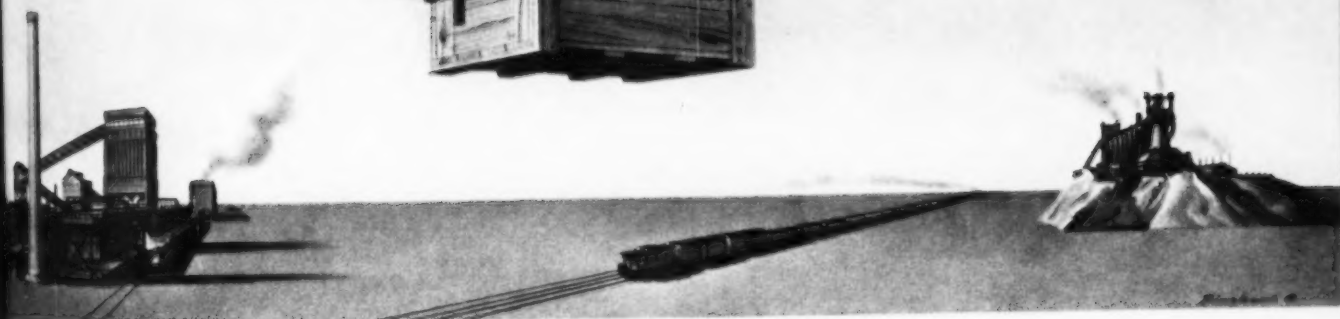
Accepted products are listed by Travelers in memorandums which are sent out to their field engineers, and revised periodically. There is no "black-list" of products which are not acceptable, however. In the list compiled by the company are floor products of many other types, as well as waxes. Floor cleaners, sweeping com-

(Turn to Page 117)

Slip-testing Machine Used in the Laboratory of Travelers Insurance Co.



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THE word "insecticide" literally means "insect killer" but by popular connotation refers to any substance employed for the purpose of affording at least temporary relief from the attack of insect pests on plants or animals. In actual practice these conditions are accomplished either by reducing the number of pests so as to curtail injury, and at the same time checking their increase in numbers and distribution, or by preventing injury through the use of repellents. Obviously, the ideal form of control, whether by cultural, biological or chemical means, is through the outright destruction of insect life for in no other way can insect pest populations be reduced to a minimum. On this basis, then, insecticides are being developed with ever higher killing power. The development of the newer fly spray toxics of high killing power is a case in point.

The agriculturalist, on the other hand, is interested not alone in the killing power of the materials he employs for controlling insects but also to protect his crops from injury until harvest time. If he can protect his stock or crops by applying materials that repel insects, or better still kill them, his insect control problem is solved. In another direction, the control of Japanese beetles on ornamentals is not so much a problem of destroying the insects on their host plants as it is of protecting the latter by insecticides that tend to repel the beetles from the foliage for an extended period of time. We must not overlook that chemicals may serve to lure insects to traps or to render palatable toxic compounds that would

otherwise be rejected, as is illustrated by the use of traps containing aromatics and by the popular use of poison baits.

Chemical control of insects, because it involves toxicity, repellency and attractancy, necessitates a knowledge of the chemical senses of insects.

Insect survival, as is true for all living creatures, depends upon satisfactory adjustments to changing conditions of environment. Organisms that do not make these adaptations successfully lose out in the struggle for existence and become extinct. Insects have been very successful in adjusting themselves to their environment—a prime factor in explaining the increasing damage which they are able to do year after year.

The manner by which organisms make these adjustments is a fruitful field of research for the biologist. There appears to be much in favor of the Loeb theory that insects react to their respective environments much as do iron filings in an electro-magnetic field. Insects respond one way or another, as the case may be, by certain inherent qualities of their constitution. Actually the environment is more complicated than an electro-magnetic field, because while the latter involves only magnetic forces, the environment involves an array of different forces or stimuli, the more important of these

being light, temperature, moisture, gravity, contact movements of the medium and chemical factors. The reactions of insects to these various stimuli vary. For instance, some insects are positively heliotactic, that is, they move *towards* the source of light, while other insects are negatively heliotactic, they move *away* from the source of light. Characteristic positive and negative responses hold true for the other types of stimuli mentioned above as well. What causes a definite response for one species of insect may cause a totally unlike response in another species. In other words, only by experiment can one determine how a given insect will react to a certain stimulus or set of stimuli. Not only do insects vary in their response to a given stimulus but, as pointed out by Richardson, "a given set of stimuli is not effective for all species." The manner in which different species of insects respond to chemicals is of extreme importance to the economic entomologist.

Among the chemicals making for insect responses, the volatile chemicals, i.e., those concerned with olfaction, are of considerable importance in the lives of insects. The odor stimulus may either act alone or in combination with such other stimuli as taste, moisture and texture. As we will discuss later on, a number of technical devices have been developed for the purpose of testing accurately the olfactory responses of insects.

The results of studies conducted with different insects in these various "olfactometers," together with observations of insect responses in the natural environment, leads one to the conclusion that the insects have an olfactory sense as acute, if not more so, than that existing among any other group of animals. Because the olfactory sense can be studied with greater accuracy than the sense of taste, considerably more data has been accumulated on the smell sense of insects. The interpretation of data on the chemo-responses of insects has been attended by the common difficulty of differentiating between the closely related senses of gustation and olfaction. Workers proceed on the basis that chemicals affecting responses of an insect from a distance involve olfaction, whereas responses of insects brought about by direct contact of the sense organs with chemical substances properly referred to as taste.

Among the higher forms of animal life, there is a structural differentiation of the chemo-receptors as well as a difference in their location. This is not entirely true for the insects. Separating the organs of taste from those of smell on a structural basis has been practically impossible. All that can be said is that these sense organs, i.e., the sensillae, that are concerned chiefly with smell, are located on the antennae, whereas the taste sensillae are usually associated with the mouth-parts or trophi. There are exceptions to this, as already indicated, for it is known that certain butterflies and flies taste largely through their feet, whereas cockroaches have olfactory sense organs on certain posterior appendages (cerci). The sensillae commonly consist of peg-like innervated hairs distributed over the surface of the body. They may stand upright on the surface of the body wall or may be sunk into deep pits. Or, the cuticula or body wall overlying the sensory cells may be extremely thin and permeable. The number of chemo-receptors that occur on the antennae of insects is variable and surprisingly large in

number. Thus McIndoo¹⁴ found from 13,000 to 14,000 such structures on each antennae of a wasp (*Vespa crabro*). Other investigators report 35,000 to 39,000 on each antenna of a June beetle (*Melolontha sp.*).

The true chemico-physical explanation of olfaction is still unsettled but workers are agreed that smell is possible, among the higher animals at least, only when the odoriferous particles fall on moist olfactory membranes. Whether this is true among the insects is a question, for while the eminent Italian entomologist Berlese maintained that the insect olfactory sensillae are kept moist by the secretion of one or more associated glandular cells. Snodgrass³² maintains that "all the sense organs, except those of the preoral cavity and the alimentary canal, are situated on dry, external surfaces." Whatever the situation is, the fact remains that insects are highly sensitive to odors.

Functions of Chemical Senses

At least three functions can be attributed to the chemical senses of insects:

(1) Food Selection for Oviposition

In general, insects exhibit a profound specificity in their selection of food.² The successful raising of caterpillars of butterflies and moths, for example, depends upon selecting the type of food peculiar to the larva's taste. Other foods are promptly rejected. Cabbage worms feed almost entirely on crucifers, the leaves of which contain mustard oil. If leaves of other plants rejected by the larvae are smeared with mustard oil, they are promptly accepted. This early (1916) observation has been confirmed by other workers for different insects. Thus it appears that many female moths and butterflies select the proper hosts on which to deposit their eggs by responses to a definite odor stimuli. Whether the females are guided by memory of the food eaten as a larvae, by a fixed inherent impulse, or by responding in a precise way to one or more sense

reactions, is a question still in dispute.

Richardson²⁹ has reviewed the literature on the oviposition response of insects and notes numerous cases where odors attract females to a particular medium in which to oviposit. Thus blow flies (adults of the screw worms) lay eggs only on decaying meat, houseflies are attracted to the odor of ammonia proceeding from horse manure and vinegar flies (*Drosophila*) to overripe fruit by the odor of vinegar and certain acids. The selection of hosts by parasitic insects is controlled by an odor stimulus. In all of these cases, while odors attract female insects to particular hosts, the inducement to actually deposit eggs is regulated by other factors, as Richardson points out, such as "the intensity and wave length of light, temperature, and humidity, rate of movement of the medium in which she lives, odor, and the physical and chemical character of surfaces . . ."

According to Crombie⁶ the lesser grain borer (*Rhizopertha dominica*) locates food by the smell sense, although the choice of a suitable oviposition medium is controlled by tactile sensations.

(2) Sexual Attraction

It is well known that insects communicate with one another largely by smell. This is the chief "language" of the honeybees, ants and termites. Recognition of worker bees at the hive entrance is accomplished by the odor of the worker. Ants leave scented trails which guide them back to the colony. Equally important is the role of odors in drawing together the sexes during the mating period. The males of many moths, for instance, bear specialized tufts of hairs on the legs and wing bases which emit an odor for the sole purpose of attracting members of the opposite sex. Freshly emerged females are known to attract males from considerable distances. Collins and Potts⁵ report a distance of 2.38 miles for male gypsy moths flying against a breeze. These investigators also found that extracts prepared from the re-

productive tissues of unmated females likewise were attractive to males.

(3) Food Selection

Many insects locate their food by smell and it may be inferred that the scent of flowers exists for the sole purpose of luring insects to their blossoms to effect pollination. More than 140 years ago, Charles K. Sprengel distinguished two types of flowers: those with small, scarcely visible flowers, lacking scent, and which are dependent upon wind for pollination; and those with conspicuous, highly-scented flowers dependent upon insects for pollination. From a very interesting paper on the language of bees by Von Frisch, we quote:

"If a new kind of flower begins to bloom in a certain region, it is discovered, after some time, by scout bees. The first bees find the flowers full of nectar. They find plenty of food and after homing they report the discovery by dancing, and in addition indicate the species of flowers by means of the scent adhering to their bodies. The bees communicated with, fly out looking for the flowers with this specific scent. Flying out in all directions, they find out in the shortest time the plant which has commenced to bloom, wherever it is in the entire flying district. Where there are already collecting bees, the scent of the scent organ makes it easier for fresh questing bees to find a good feeding place. When the number of bees has become sufficient to collect the amount of nectar in these flowers, the flowers are no longer full of nectar, the nectar becomes scarce, there is no more dancing, and the number of bees does not increase. If different plants begin to bloom at the same time, the flowers with the sweetest nectar cause the most vigorous dancing and, incited by the scent adhering to the body of the dancer bee, the largest number of bees fly to the best feeding plants."

Recent studies by Dethier⁸ on the larvae of swallowtailed butterflies (*Papilio*) indicate that the selection of food is controlled by repellent (physical condition of the plant—toughness, pubescence of foliage, etc.) or attractant (essential oils). Thus, certain species are attracted to parsley due to certain essential oils methyl chavicol, anethole, carvone, coriandrol, sedanolid).

The fact that many of our noxious forms of insects are respon-

sive to volatile chemicals has led to a study of odoriferous substances for mitigating their attack. Two classes of compounds are thus employed, attractants (attractants) to lure insects to poisoned baits and traps, etc. and repellents for repelling insects. The common use of molasses, salt, and other materials for rendering baits more attractive to insects (cut-worms, grasshoppers) is more likely concerned with the insect's sense of taste than of smell.

Attractants

IT is a matter of common observation that insects are attracted to many odoriferous substances. An overripe banana or an open jar of vinegar is a sure lure for *Drosophila*, the vinegar fly. A dead rodent quickly attracts a variety of carrion beetles. The exuding sap of maple trees in early Spring attracts multitudes of beetles and butterflies. One of the favorite methods of collectors of moths and butterflies is the smearing of trees, fence posts and other objects with a fermented mixture of brown sugar and molasses. On visiting the "sugared" trees and posts with a suitable light many hundreds of moths will be found imbibing the sweets, among them many of economic importance.

The possibility, then, of utilizing substances for attracting insect pests is one that has met with considerable success in several instances. Adult Japanese beetles can be collected in huge numbers by the use of traps containing a mixture of geraniol and eugenol. According to Jones and Haller about 25,000 pounds of geraniol have been used annually for this purpose.

The suspension into trees of pans filled with sweetened mixtures to lure pests has been used extensively by commercial orchardists in their fight against the codling moth. In 1927, the Washington Experiment Station recommended a mixture of one gallon apple cider, one-half pound brown sugar, one cake of yeast, to which was added, after fermentation, four gallons of water. In one

test 17,429 moths were caught on 93 traps in a six acre orchard. The moths are killed when they entrap themselves in the liquid bait. Studies at the Ohio State Station have indicated that the use of bait pails is "not a practical method of control" for this insect.

The more popular use of baits in orchard insect pest control has been as an aid in establishing spray schedules by daily observation of moth populations at traps. Here again the codling moth serves as an illustration. The successful control of this insect depends upon applying sprays at a precise time during the moth flight so that the fruit will be protected by a coating of poison to prevent the hatching larvae from gaining entry. Although there is an established apple spray schedule that orchardists follow, there still is no way of knowing the exact time the spray should be applied except by the use of bait traps. Owing to the variations which can exist in any one limited area, many orchardists operate their own bait traps or "hootch traps" as they are called. The entomologists at the experiment stations similarly operate traps and inform growers by radio or post card when to spray for most effective results.

In an effort to make codling moth baits more attractive to the moths, various materials have been tested, some of which appear promising. Early work at the New Mexico Station⁹ proved that a 1-10 dilution of a certain kind of corn syrup and water was more effective than ethyl oxyhydrate (from vinegar) which, in turn, was more effective than the same ester produced from cane sugar. Later a series of aromatic chemicals was studied and tests showed that the "methyl series of phenyl, acetic, malonic, propionic, and oxalic acid esters, and the ethyl series of malonic, propionic, and oxalic acid esters were significantly attractive." In subsequent studies it was reported that the phenyl derivatives of the lower organic acids, alcohols and esters were more attractive than their parent com-

(Turn to Page 105)



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PYRETHRUM ANALYSIS

The effect of certain aliphatic thiocyanates in the determination of Pyrethrin I in mineral oil extracts by the Mercury Reduction Method

By J. J. T. Graham

U. S. Department of Agriculture

THE Mercury Reduction Method proposed by Wilcoxon¹ for the determination of Pyrethrin I, was modified by Holaday² to make it applicable to the determination of this ingredient in fly sprays and other insecticides. Holaday's modification has been adopted as an official method for the determination of Pyrethrin I in pyrethrum extracts in mineral oil³.

Recently a criticism came to this writer that in mineral oil extracts of pyrethrum containing Lethane 384 Special,* determinations of Pyrethrin I gave lower values than were indicated by analysis of the pyrethrum extract before addition of Lethane. Holaday's work had shown that 5 per cent by volume of Lethane 384 caused no interference in the accuracy of the results. A study of the effect of Lethane 384 Special on this determination was therefore undertaken.

Because of the fact that saponifiable substances other than pyrethrins were present, the quantity of half normal alcoholic sodium hydroxide was increased so as to get complete saponification. Using this modification, results higher than the theoretical values were obtained. Extensive washing of the precipitated mercurous chloride with organic sol-

* beta butoxy beta' thiocyno diethyl ether in addition to the beta thiocyno ethyl esters of certain higher fatty acids, standardized at 50 per cent in a petroleum distillate.

** beta thiocyno ethyl esters of higher fatty acids to which an emulsifying agent and certain oils have been added. The thiocyanate content has been standardized at 23 per cent. Lethane 440 is recommended only for horticultural purposes.

PYRETHRIN I, DETERMINED IN PRESENCE OF LETHANE
384 SPECIAL AND LETHANE 440

Sample A Lethane, None		Sample B Lethane 2.5%		Sample C Lethane 5.0%	
Mg	%	Mg	%	Mg	%
16.1	.026	14.1	.023	13.6	.022
16.5	.026	16.3	.026	15.0	.024
16.3	.026	...	...	15.4	.025
...	...	16.7	.027	16.5	.027
...	...	16.3*	.026*	15.6*	.025*

* Lethane 440 used in these determinations; all other results under B and C were obtained in presence of Lethane 384 Special.

vents failed to remove the interfering substances, indicating that the error in this case was not due to unsaturated organic compounds which, if present, would be removed by such washing.

By further experiments it was established that the interference was caused by water soluble substances which could be removed by washing with hot water following the washing with alcohol and chloroform.

For the final experiments stock solutions of pyrethrum extract, 10 per cent by volume Lethane 384 Special, and 10 per cent by volume Lethane 440,** were made in a highly refined spray oil base. Sample A consisted of 50 ml of the pyrethrum extract solution and 50 ml of spray oil base. Sample B consisted of 50 ml of the pyrethrum extract solution, 25 ml of the spray oil base, and 25 ml of the 10 per cent Lethane 384 Special or Lethane 440 solutions. Sample C consisted of 50 ml of the pyrethrum extract solution and 50 ml of the 10 per cent Lethane 384 Special or Lethane 440 solutions.

The total volume in each case was 100 ml and in each determination the same quantity of Pyrethrin I was present. These were analyzed by the official mercury reduction method as described in paragraph 116, page 67, of "Official and Tentative Methods of Analysis of the Association of Official Agricultural Chemists," 5th Edition, 1940, with the following exceptions:

The half normal alcoholic sodium hydroxide solution was increased so that 60-80 ml was used for the saponification when 5 per cent of the Lethane was present. The quantity of barium chloride solution was increased to 20-25 ml. When Lethane was present the washing with alcohol (acetone is not a satisfactory reagent in this determination) and chloroform on a 7 cm filter paper was followed with one washing with alcohol and then with hot water, filling the filter 4 or 5 times. The results obtained are given in the accompanying table:

(Turn to Page 105)

Theatre Spray Odors



BOUQUET	LILAC	VIOLET
CHYPRE	NARCISSE	WISTERIA
FOUGERE	ORIENTAL	MINT
GARDENIA	ORANGE BLOSSOM	•
JASMIN	PINE	
LAVENDER	ROSE	
LEMON	TREFLE	

DIRECTIONS

To produce an attractive Theatre Spray, best results can be obtained by using from 2 to 4 ounces of water soluble oil to 1 gallon of warm water. First, put the water soluble oil in a container, add one quart of lukewarm water and agitate thoroughly, then continue to add the balance of warm water slowly, to make one gallon.

If you cannot find the odor you desire in the above list, write us and our laboratories will develop that particular type for you.

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Carriers of

ROTENONE DUSTS

By H. F. Wilson and R. L. Janes

UNIVERSITY OF WISCONSIN

GREENHOUSE studies of carriers for rotenone dusts have produced conclusive evidence to show that successful control of the pea aphid is largely dependent on the diluent used. Thirty-seven different samples of talc and pyrophyllite from the following states have been included in this study:

California—five deposits of talc and one of Pyrophyllite.

Georgia—four deposits of talc.

Maryland—two deposits of talc.

New York—three deposits of talc.

North Carolina—three deposits of talc; two deposits of Pyrophyllite; one deposit of Mica.

Vermont—one deposit of talc.

Virginia—two deposits of talc.

Washington—one deposit of a magnesite.

Wisconsin—one deposit of talc.

These have been studied and classified according to particle shape, electrostatic charge values, flowability and biological control.

Five of the samples examined are classified as superior, six fair and the remainder very poor. Three samples of pyrophyllite have been examined. One was superior, one fair and one very poor. These estimates are based on data obtained with comparisons made on the pea aphid as the control. Each diluent was compared by a series of carefully regulated tests with uniform aphids at temperatures ranging between 64° to 69° F.

The comparisons were made by mixing the diluents with ground cubé root at strengths of .1, .25, .5, .75, and 1 per cent rotenone. All mixtures were conditioned with 2 per

cent soybean oil or SAE10 lubricating oil.

The best mineral diluent tested was a pyrophyllite sold under the trade name of "Pyrax ABB," taken from a deposit in North Carolina. One calcium carbonate diluent was also found to be very good but calcium carbonate samples from different sources were found to be quite variable and not all were too good. The reasons for the differences between diluents are not fully understood, but particle shape and chemical composition seem to be important. Particle size does not at this time seem to be of great importance. The electrostatic charge developed in the process of applying the finished dust is important. The hardness of the diluents may or may not be important, but those diluents that develop the highest electrostatic charges in mixed dusts cause more or less abrasion which may be due to hardness or to particles of free silica. High electrostatic charges are directly associated with high degrees of pea aphid control in greenhouse experiments. As a general rule, diluents that develop low electrostatic charges when blown through a dust applicator are inferior to those that develop high charges.

It is generally possible to tell just how a diluent will rank by a microscopical examination and ten tests with the electrostatic machine. A single biological test at temperatures between 65° and 70° F. with our method will then give a reasonably accurate ranking of the material in 48 hours. All mineral diluents will develop an electrostatic charge of 100

to 10,000 volts on the apparatus we use. If the charge is less than approximately 6,000 volts for the finished dust, the diluent is generally very poor. If the range is 8,000 to 10,000, the diluent may be fair or superior but not necessarily so. Some diluents that develop high charges do not prove satisfactory when used in a finished dust.

Our present theory is that because of high alkalinity in some diluents some deterioration of the rotenone takes place almost at once. The charge is reduced when ground cubé or derris is added. If equal parts by weight, of the diluent and ground cubé root are mixed, a diluent developing 4,000 to 5,000 volts of electrostatic electricity may drop to zero. If more ground cubé is added, the electrostatic charge will increase but the charge has changed from positive to negative.

Most talc diluents tested, produced positive charges on the dust machine while ground cubé, derris, and other plant materials developed negative charges. This means that the talc diluents produced a negative charge while the plant materials produced a positive charge. The maximum charge developed by ground cubé and derris is approximately 5,000 to 6,000 volts. Calcium arsenate, zinc arsenite and lead arsenate appear to develop positive charges.

Several plant diluents have been studied and they produce from 2,000 to 7,500 electrostatic volts. Walnut shell flour and lignin dust furnished by the Forest Products Laboratory developed high charges in preliminary tests and produced very



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high control of the pea aphid. When 1 or 2 per cent oil is added to both plant and talc diluents, the electrostatic charge is increased. The effectiveness of mixed dusts is greatly increased when liquid oils are added. The important differences between these diluents is that while good control can be secured with most talcs when .75 per cent rotenone is used, equally good control can be secured with .25 to .5 per cent rotenone when the better talcs are used.

The following diluents have been found superior:

1. Pyrophyllite (Pyrex ABB) R. T. Vanderbilt Co., New York.
2. Calcium Carbonate. The Calcium Carbonate Co., Chicago.
3. Soapstone. Industrial Minerals Co., Berkeley, Calif.
4. Harford Talc. Harford Talc and Quartz Co., Baltimore.
5. Wisconsin Talc. H. L. Geisse, Wausau, Wis.
6. Emtco No. 23. Eastern Magnesia Talc Co., Burlington, Vt.

All talcs appear to be somewhat less effective than "Pyrex" or calcium carbonate. Harford Talc, Wisconsin Talc, and Eastern Magnesia Talc appear poorer than the others if less than .5 of 1 per cent rotenone is used. All of these materials cause variable amounts of abrasion but the talcs cause less than "Pyrex."

It has also been found that there is considerable variation between different lots of material from the same mine, and the material produced and sold one year may be better or poorer than that sold the year before. It is therefore going to be necessary for the diluent producers to protect themselves against variable results by working out specifications on different layers or veins found in their mines.

Pyrethrum Analysis

(From Page 101)

To determine the effect on the results of washing the precipitated mercurous chloride with hot water, a number of determinations were made by using a quantity of calomel corresponding to that precipitated in

the pyrethrin determinations. In one series of determinations the weighed portions of calomel were transferred directly to the titrating flasks, and in a second series they were washed five times on 7 cm filter papers with hot water before titration. No significant differences in the titrations were observed.

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Attractants and Repellents

(From Page 99)

pounds. A great deal of data is involved in these studies which will suffice to illustrate the attention that has been given to chemicals for attracting adult codling moths to baits.

The Oriental Peach Moth (*Laspyresia molesta*) is similarly attracted to baits of fermenting molasses yeast mixtures.

Investigations of the U.S.D.A., Division of Truck Crop and Garden Insects, have shown that certain amyl esters of salicylic acid attract tobacco horn worm moths.

The use of odors along with traps to attract and kill insects is a promising field for investigation and already has shown considerable promise for the Japanese beetle. Of numerous materials studied by Metzger²⁴ of the U. S. Department of Agriculture, a liquid consisting of one part eugenol and ten parts of geraniol, with or without one-half part of phenyl ethyl alcohol, was the most effective.

Studies by Wilson²⁵ at the Wisconsin Station revealed that clothes moths and carpet beetles are attracted to baits of fish meal spread on sticky fly paper. By placing such baits in closets for varying lengths of time, considerable numbers of these insects were captured.

Naphthalene, paradichlorobenzene, and oil of cedar have long been used to protect fabrics from infestation by clothes moths and carpet

beetles. Although there has been some controversy over the true repellent value of these materials (certain investigators claiming no repellency) it appears, as pointed out by Herrick¹³ that they actually do repel as well as kill fabric insects.

Houseflies are readily attracted to the odor of formaldehyde and solutions of it in sweetened milk have long been recommended as an effective means of control.

A new development in the control of fruit flies is the use of protein lures. McPhail²² observed that the Central American fruit fly (*Anastrepha striata*) were attracted to proteins in the presence of sodium hydroxide solution. Casein, gelatin, filter-press mud, baker's yeast, cow hide with hair attached, cow blood, egg white and wheat shorts and certain amino acids were attractive. Additional work by Dean⁷ on the apple fruit fly (*Rhagoletis pomonella*) with protein lures gave further indications of the possible usefulness of such materials in insect control.

The study of chemicals for attracting insects is a matter of growing interest to the economic entomologist since it has a bearing on the control of a considerable number of important insect pests. Much more work, however, needs be done before this phase of chemical control of insects can be said to be adequately utilized.

(To Be Concluded)

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Insecticide from Prickly Ash

The petroleum ether extract of the bark of southern prickly ash (*Zanthoxylum clava-herculis* L.) itself extracted with 90 per cent acetic acid, gives a mixture of light-colored semi-solid products toxic to houseflies. F. B. LaForge, H. L. Haller and W. N. Sullivan. *J. Am. Chem. Soc.* 64, 137 (1942).

Disinfecting Vapors

Disinfecting gases and vapors are produced by heating porous heat-resisting bodies impregnated with silver or silver compounds in a current of gas up to a temperature sufficient to effect the vaporization of the silver or silver compounds. Richard Muller. *British Patent No.* 519,573.

Toxicity of Antiseptics

A paper dealing with "Relative Toxicity of Certain Antiseptics Containing Soap and Alcohol with Special Reference to Mouth Washes," delivered by Henry Welch and Charles M. Brewer before the Laboratory Section of the American Public Health Association at the 1941 convention of that group at Atlantic City, is published in the March, 1942, issue of the *American Journal of Public Health*. Findings of these investigators are summarized as follows:

"Using the destruction of phagocytic activity as a measurement of toxicity and comparing toxicity with germicidal ability under a similar set of conditions to obtain a toxicity index, it was found that the addition of alcohol to a solution of phenol increased the toxicity index. A very marked increase in the toxicity index occurred when soap was added to phenol solutions. The relatively high toxicity index caused by the addition of soap was demonstrated with several phenolic compounds and essential oils. The toxicity of alcohol and soap was obtained for comparison. The toxicity and germicidal power of 87 commercial mouthwashes have been determined. Only 9 of the 87 mouthwashes tested were found to be germicidal under the conditions of test, while 62 were toxic in a 1:5 dilution; 14 were toxic in a 1:10 dilution; 2 were toxic in a 1:15 dilution; 5 were toxic in a 1:20 dilution, and one each was toxic at dilutions of 1:25, 1:30, 1:40 and 1:50.

"A brief discussion of the application of the toxicity-index method to the evaluation of antiseptics is presented."

Bactericidal Action Studies

The bactericidal action of a number of anionic and cationic synthetic detergents was studied. The cationic products selected were "Zephiran," "Phemerol," "Retarder LA," "Emulsol-605," "Catol," "Emulsol-607," "Damol," and "Emulsol-609." Anionic products were the sodium salts of cetyl sulfate, myristyl sulfate, "Duponol LS," "Tergitol-8," "Triton W-30," "Igepon T" and

"Tergitol-4." The cationic detergents as a group exhibit marked bactericidal effects on Gram-positive microorganisms and less pronounced action on Gram-negative organisms. The anionic detergents were germicidal only against the Gram-positive organisms and they were considerably less effective than the cationic compounds. Of the anionic detergents, the most active one was an alkyl sulfate derived from a branched-chain secondary alcohol. Zelma Baker, R. W. Harrison and Benjamin F. Miller. *J. Exptl. Med.* 74, 611-20.

Comparison of Larvicides

Chemically pure rotenone and a preparation containing 90 per cent of rotenone applied in the form of washes to infected cattle once during the grub season, were not so effective in killing the cattle grubs *in situ* as derris or cubé washes. Single treatments of derris or cubé washes containing 12 ounces per gallon of water killed 90-100 per cent of grubs if applied 30 days after the first grub openings appeared. C. E. Smith, Elmer Livengood and Irwin H. Roberts. *J. Am. Vet. Med. Assoc.* 99, 391-4.

Mothproofing Compounds

Aromatic hydroxy compounds in which all the hydroxy-containing aromatic groups are substituted with at least one cycloaliphatic radical are very effective in protecting textiles, furs, etc., against moths and similar insects. Very suitable compounds are cyclohexylresorcinol and 4-methylcyclohexylphenol. Especially effective are compounds containing chlorine atoms in the para position to the hydroxy of the aromatic group, such as 4-chloro-2-isoamyl cyclohexylphenol. Deutsche Hydrierwerke A.-G. German Patent No. 703,924.

Phenol Composition

A composition contains a solid phenol compound and more than an equivalent weight of bentonite. At least an equivalent weight of bentonite is in solid suspension in the phenol. S. B. Heath and W. L. Scoles, to Dow Chemical Co. Canadian Patent No. 401,338.

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NEWS

Hughes Chem. in New Bldg.

Hughes Chemical Company, Fort Worth, Texas, manufacturer of soaps, cleaners, insecticides and other janitor supplies, is now located in its own building at 158 West Magnolia St., Fort Worth. The new Hughes building increases the floor space and capacity of the company by about 50 per cent, according to Frank Hughes, Jr., president of the firm. The new building includes offices, display room, manufacturing facilities and interior loading platforms.

McCormick on Advisory Board

C. P. McCormick, president of McCormick & Co., Baltimore, was recently invited to serve on the Business Advisory Council of the U. S. Department of Commerce. Present chairman of the council is R. R. Deupree, president of Procter & Gamble Co., Cincinnati.

Corl in Chemical Warfare

Cady S. Corl of Allaire, Woodward & Co., Peoria, Ill., producers of pyrethrum products and drug specialties, was called to active duty with the Chemical Warfare Service of the Army on March 19th and is now a captain in that branch of the service stationed at Huntsville Arsenal, Huntsville, Alabama. Captain Corl is well known in the insecticide industry for his earlier research work in the chemistry of pyrethrum, particularly in the development with C. B. Gnadinger of the Gnadinger-Corl Method for the determination of pyrethrins.

Furst on NAIDM Board

Charles W. Furst, president of the Furst-McNess Co., Freeport, Ill., manufacturers of insecticides and other household specialties, was elected a member of the Board of Governors of the National Association

of Insecticide & Disinfectant Manufacturers at a meeting of that Board on March 12 at the Hotel Roosevelt, New York. Mr. Furst who



CHARLES W. FURST

has been active in the affairs of the NAIDM for a number of years was chosen to fill the unexpired term of Robert C. White, Jr. of the Robert C. White Co., Philadelphia, who recently resigned from the Board to enter active service as a lieutenant in the Navy. Mr. Furst will serve until the next annual meeting of the Association in December, 1942, when a regular election by the membership will be held.

N. Y. PCO's in Joint Meeting

A general informational meeting sponsored jointly by the New York Pest Control Association and the Professional Exterminators Association was held March 10, at the Hotel Commodore, New York. Problems of supplies and equipment, including automobile tires, were discussed. Features of the meeting were the following talks: "Field Use of Poisons and Antidotes" by Ernest M. Mills, field agent of the U. S. Fish & Wildlife Service, New Brunswick, N. J.; "Poisons, Their Action and Their Antidotes" by Dr. James C.

Munch, consulting pharmacologist of the U. S. Fish & Wildlife Service; and "Commercial Production of Antidote Kits" by Dr. Joseph D. McIntyre, president of D. Jayne & Son, Philadelphia.

Exhibit at Safety Show

Several manufacturers of soap and sanitary chemicals were among the exhibitors at the 13th annual Safety Convention and Exposition of the Greater New York Safety Council, held March 3-6 at the Hotel Pennsylvania, New York. They included C. B. Dolge Co., of Westport, Conn.; Great Stuff Products Co., Inc., West New York, N. J.; G. H. Packwood Manufacturing Co., St. Louis, Mo.; Sugar Beet Products Co., Saginaw, Mich., and West Disinfecting Co., Long Island City, N. Y.

Asks No Rise in Mercurials

Producers of mercurial compounds, used in pharmaceuticals, germicides, insecticides, and other products, were asked by price administrator Leon Henderson in telegrams on March 4 to maintain for 60 days prices in effect on Feb. 25, 1942, "pending the completion of our investigation of these materials."

Hitchner Addresses Chemurgic

L. S. Hitchner, executive secretary, Agricultural Insecticide-Disinfectant Association, New York, spoke at the eighth annual conference of the National Farm Chemurgic Council in Chicago, March 27, where he discussed new developments in insecticides and fungicides. Percy C. Magnus, president of Magnus, Mabee & Reynard, Inc., New York, was another speaker, his topic being, "Domestic Sources for Essential Oils." Dr. R. C. Newton, vice president of Swift & Co., Chicago, served as chairman of one of the sectional sessions during the three-day conference.

Breuer Expand Plant

Breuer Electric Mfg. Co., Chicago, is constructing an addition to its plant at 5100 North Ravenswood Ave., which will double the company's manufacturing capacity.

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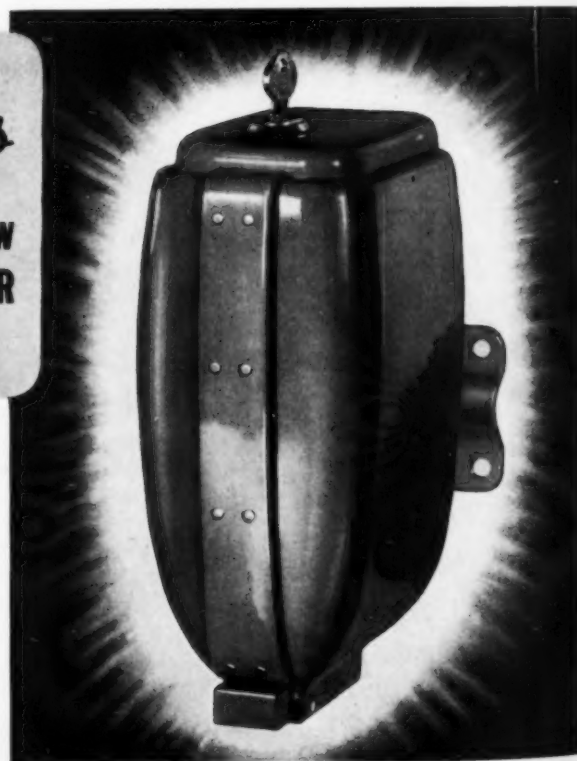
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N.A.I.D.M. Meets In Chicago, June 8

THE 28th annual mid-year meeting of the National Association of Insecticide & Disinfectant Manufacturers will be held at the Edgewater Beach Hotel, Chicago, on June 8 and 9. According to Ralph O. Cowin of the Standard Oil Co. of Ohio, chairman of the program committee, a two-day meeting of business sessions will be held with emphasis on war and defense angles of sanitation and sanitary supplies, and the war problems of manufacturers in the insecticide, disinfectant and allied fields. Speakers will cover various subjects on these problems including a representative of the Navy on sanitation, a representative of a large industrial plant covering the maintenance of sanitary working conditions during continuous operation under war conditions, and a representative of a leading women's club group will present a consumer's slant on insecticides and disinfectants. New public health problems growing out of the war and the materials needed in their solution will be the subject of another speaker. The attitude of Washington toward sanitation and the materials needed in maintaining it will also be discussed.

One entire session of the meeting will be given over to a series of speakers who will cover present raw material situations, including a discussion of the various types of containers and what the prospects are for the future. Difficulties of transportation under war conditions and what can be done about them will also be taken up at the same session. A well-known banker whose name has not yet been announced will address the meeting on the current financial outlook and how this will affect business. Those among the officers of the Association who are scheduled to



RALPH O. COWIN
Standard Oil Co. of Ohio



H. M. CLARK
Dr. Hess & Clark, Inc.

speak include John N. Curlett of McCormick & Co., Baltimore, president of the Association, and H. W. Hamilton of the White Tar Co., Kearny, N. J., secretary. Several representatives of Government departments are also on the program.

The regular meeting of the Association on June 8 and 9 will be preceded by a meeting of the Board of Governors on Sunday, June 7, at the Edgewater Beach Hotel, and the meetings of several important

committees. Group luncheons will be held each day and the meeting will close with an informal dinner on Tuesday evening, June 9. H. M. Clark of Dr. Hess & Clark, Inc., Ashland, Ohio, assisted by Friar Thompson of the Hercules Powder Co., Wilmington, will be in charge of entertainment. General financial arrangements and registration will be in charge of John Powell of John Powell & Co., New York, treasurer of the Association. The meeting was originally scheduled for Hershey, Pa., but owing to anticipated transportation difficulties, was switched to Chicago by a recent emergency vote of the Board of Governors.

Publish Fly-Polio Study

A paper by John R. Paul and James D. Trask, "Occurrence and Recovery of the Virus of Infantile Paralysis from Sewage," delivered last Fall before the American Public Health Association at Atlantic City, appears in full in the March, 1942, issue of the *American Journal of Public Health*. A section of the paper giving evidence to indicate that the polio virus is carried by the housefly, which attracted much public interest at the time, is extracted as follows:

"A new finding which has only recently come to light and which may or may not have considerable significance in the epidemiology of poliomyelitis is the isolation of the virus of poliomyelitis from flies. This has been done on two separate occasions in epidemics in Connecticut and Alabama. In both instances the 'contaminated' flies were caught within areas where the prevalence of poliomyelitis was high and where proven human carriers were known to exist. In both instances the flies had had the opportunity of feeding recently, both in and outside of privies, on human stools which may well have contained the virus. The possible carriage of the virus by these insects would explain much about the baffling nature of this disease."

The authors cite three references as follows, describing the isolation of poliomyelitis virus from flies collected within epidemic areas: Paul,

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J. R., Trask, J. D., Bishop, M. B., Melnick, J. L., and Casey, A. E. *Science*, 94:395, 1941. Sabin, A. B., and Ward, R. *Science*, 94:590, 1941. Toomey, J. A., Takacs, W. S., and Tischer, L. A. *Proc. Exper. Biol. & Med.* 48:637, 1941.

Improves Castor Insecticide

Woburn Degreasing Co., Harrison, N. J., reports progress in its experiments with insecticidal toxins derived from the castor plant. All the toxins present in the plant have not yet been isolated, it is said, but the castor-derived product is described as satisfactory in the control of scale insects and several species of spider in Florida citrus groves and New England apple orchards. Castor extracts are said to be suitable for agricultural insecticides but not for household products.

Exhibit at Chi. Hotel Show

System Products Co., Chicago, exhibited their "Kleen-Rite" cleaning compound for carpets and upholstery, together with their line of vacuum cleaning machines at the Midwest Hotel Show in Chicago, March 17 to 20. Bernard Ernsteen, System vice president, supervised demonstrations of the process which permits cleaning of floor coverings and furniture without putting the hotel room out of service. Hild Floor Machine Co., Chicago, also exhibited a line of rug and carpet shampoos and other cleaning agents for use with their "Hushed Hild" silent vacuum cleaning equipment for hotels and hospitals. Fred Lyons, sales manager, was in charge.

Indian Head Corp. Liquidated

Indian Head Manufacturing Corp., St. Paul, Minn., has just gone out of business "because of inability to obtain materials," according to a recent communication from John H. Glover, head of the company.

Ridbo Labs Move to Paterson

Ridbo Laboratories, Inc., formerly located at 113 East Center Street, Nutley, N. J., have just moved to new quarters at 111-117 Pennsylvania Avenue, Paterson, N. J.

NSSA Convention April 20-22

The 20th annual convention of the National Sanitary Supply Association, which is to be held at



M. L. MAGEE

the Hotel Morrison, Chicago, April 20-22, promises to be a record breaker in attendance, judging from early reservations. At least 300 dealers and manufacturers from all parts of the United States are expected to be on hand, according to the association. The customary get-together dinner for all delegates and their wives will be held the evening of the first day, while the banquet and entertainment will be held the evening of the second day. M. L. Magee of T. F. Washburn Co., Chicago, president of the association, has invited all sanitary supply firms to attend the convention sessions.

Uncovers New Soap Formula

Vacationing in St. Petersburg, Florida, Leonard Schwarcz of Ampion Corp., New York, has unearthed in one of the local papers a rather remarkable formula for home made soap which we include in our compendium of "soap curiosa" in an article on home soap making elsewhere in this issue. He advises us that he assumes no responsibility for the formula, which by the way includes half a cup of kerosene and a like amount of sugar, warning that it may be patented.

Incidentally, besides getting up to date on latest local soap making technique, this well-known sani-

tary supply manufacturer and occasional contributor to *Soap and Sanitary Chemicals* advises that he is out to top Henry Nelson's catch (reported but unverified) of a 230 lb. tuna of which we ran a picture back a season or two ago. Schwarcz writes that up to the moment his fishing has frankly been of the "frog-in-well" variety. Baiting with five-inch shrimp, his biggest specimen so far is a 4½-inch butterfish—a dead loss of a half inch.

PCO's Meet in Illinois

The fourth annual two-day conference of the North Central States Entomologists was held in the Illinois Union Building at Urbana, Ill., March 26 and 27. Professors C. L. Metcalf of the University of Illinois and W. P. Flint of the State Natural History Survey arranged the program which centered about the theme "How Entomologists Can Best Contribute to the Victory Program and War Effort." Various phases of pest control work in relation to food production, and protection of the health of men and animals were discussed in the general session the morning of March 26, while afternoon sessions were devoted to: Cereal and Forage Crop Insects; Insects Affecting Man and Animals; and Insecticides. The second day sessions of interest to PCO's were held on Household Insecticides, led by W. A. Price and C. Norman Dold, co-chairmen; Stored Products Insects, led by H. H. Shepard and George Decker, and Illustrating Insects and Their Activities, by R. C. Smith and Leonard Haseman. The annual banquet was held the evening of March 26th.

Canada Restricts Can Use

The Canadian government recently issued instructions to can manufacturers ordering them not to produce tinplate for containers for brushless shaving cream, liquid, paste and powdered soap, and various other similar products. Manufacturers of these products are not stopped from using their inventories of tin cans, but can manufacturers are prevented from making any more containers for such use.



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Forms Bri-Test Prods. Corp.

Louis Gould, who has been associated with the chemical specialties industry for the past fifteen years, has just opened up a new plant under the name Bri-Test Products Corp., at 810 East 136th St., Bronx, New York. The new firm, which went into production late last month, manufactures a line of waxes, cleaners, polishes and scrub and hand soaps for the trade, under the "Bri-Test" trade mark, and in bulk under private brands. Mr. Gould was formerly connected with Buckingham Wax Corp., Long Island City, and before that time, with R. M. Hollingshead Corp., Camden. He originally entered the chemical specialties field about fifteen years ago, with his own firm, Drake Products Co., Bronx, later incorporated with Windsor Wax Co., Bronx, with which Mr. Gould was also connected for a number of years.

Spray Material Conservation

"Meeting the Spray Material Shortage," a recent bulletin of the Connecticut Agricultural Experiment Station, New Haven, discusses methods of meeting expected shortages of such materials as are required in protecting food crops from insect pests. The bulletin suggests that the best answer to the problem is to stretch supplies of materials commonly used rather than to depend too heavily on possible substitutes. The greatest single saving in the common materials can be made by reducing the dosage applied, it is said. Suggestions are offered for improving coverage, for timing treatments, and on timing the planting of crops to escape pests. The use of alternate materials to supplement shortages is recommended. Impregnated pyrethrum dust, impregnated rotenone dust and synthetic organic thiocyanates are mentioned as excellent insecticides to supplement rotenone dusts.

Lehn & Fink Name Dahl

N. F. Dahl, former president of the Toilet Goods Manufacturers' Association, has just been appointed managing director of Lehn & Fink, Toronto.



Wil-Kil Opens New Building

Wil-Kil, Inc., pest control firm, Milwaukee, has just opened a new 32 ft. x 75 ft. building containing fumigation chambers and an exhibit room, at its premises, 522 W. North Street. A special feature of the company's new exhibit room is a miniature house arranged to show the usual building construction with a space between inner and outer walls and between ceilings and floors where vermin and rodents may breed. The various types of insulation and lum-

ber subject to attack by termites and other wood-boring insects are also shown. Explanation cards are distributed throughout the house pointing out places where mice, rats, squirrels, starlings, wasps, bees, bats, etc., may enter the house through faulty construction or roof defects.

The new Wil-Kil fumigation chambers are equipped to handle automobiles and complete loads of furniture. Temperatures as high as 250 degrees can be maintained in the fumigation chambers.

Lueders Co. Honors Waegelin

George G. Waegelin, secretary of George Lueders & Co., New York, essential oils and aromatic chemicals, celebrated his 25th anniversary with the company on March 26th. He was inducted as the 31st member of the Lueders 25-year club, and was presented with the customary wrist watch and a service medal. His associates presented him with an oil painting.

Invert Soaps of Naphthalene

Invert soaps possessing a chain of 16 carbon atoms have been shown to have the highest bactericidal activity. Following this further, similar types of compounds possessing a condensed ring system such as naphthalene, were prepared and examined as to bactericidal activity. N, N-dimethyl-N-cetyl-beta-naphthyl ammonium iodine, N-methyl-N, N-dinormal-butyl-N-beta-naphthyl ammonium salt and N, N, N-trimethyl-N-beta-naphthyl ammonium salt, all but slightly soluble in water, showed a phenol coefficient of not more than

0.2 against *Staphylococcus aureus*. This surprising result of complete inactivation indicates that the cetyl group and the length of the carbon chain alone are not responsible for high bactericidal action. Joseph B. Niederl and Hersh Weingarten. *J. Am. Chem. Soc.* 63, 3534-5 (1941).

Stabilized Insecticide

Insecticides containing rotenone and pyrethrum are stabilized by compounds from the class consisting of aminophenols, dichloroaniline, salicylic acid and anthranilic acid. Ludwig J. Christmann and David W. Jayne, to Am. Cyanamid Co. Canadian Patent No. 401,965.

Repellent Patent

A repellent composition suitable for combating flies, gnats, mosquitoes, etc., contains as an active ingredient a primary aliphatic alcohol of 10-14 carbon atoms, such as decyl or dodecyl alcohol. A. W. Ralston and J. P. Barrett, to Armour and Co. U. S. Patent No. 2,254,665.

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The germicidal value of eucalyptus disinfectants can be increased by addition of *para*-chlorophenol, *para*-chloro-*meta*-cresol, or *para*-chloro-*meta*-xylenol, all of which are powerful germicides. The oil, while water-insoluble, may be dispersed in 20 per cent potassium oleate in which chlorophenol is soluble. Most preparations of this type contain 4-10 per cent of chlorophenol, an equal proportion of volatile oil, and the rest soap solution. Addition of a little cyclohexanol is said to increase the solvent power of the soap. The product is usually a clear yellow liquid with a Rideal-Walker coefficient of about 5. It is nonpoisonous and may be sold for household use.

Para-chloro-*meta*-xylenol is itself a powerful germicide with a Rideal-Walker coefficient of about 150. It has been strongly recommended for the sterilization of surgical rubber gloves. *Manufacturing Chemist* 13, 17 (1942).

Organic Germicides

The germicidal activity of ten organic substances against *Escherichia coli*, *Bacillus subtilis*, *Staphylococcus aureus* and *Eberthella typhi* was measured by the "wet filter paper method" with a few minor modifications. Six substances were inactive, one was active only against *E. typhi*. 2-Ethyl-1-naphthol, 4, 6-diethyl resorcinol, and 2-propyl-1-naphthol killed all of the organisms in 30 minutes, except that the last substance did not kill *E. coli*. These compounds are to be studied further because of their promising germicidal properties. H. L. Cole, C. C. Prouty and Emily R. Meserve. *J. Am. Chem. Soc.* 63, 3523-4 (1941).

Rotproofing Comments

Cuprinol, Inc., Cambridge, Mass., in a recent letter to the editor dealing with an article on "Rotproofing Treatment" which appeared in the January issue of *Soap and Sanitary Chemicals*, has the following comment: "It has been found in England that copper naphthenates are far superior to any other type of preserva-

tive and that copper naphthenates together with creosote are better than copper naphthenates alone." For substantiation, he refers to an article by

ALL PURPOSE FLY SPRAY

The case in favor of all-purpose fly sprays is surveyed by Dr. E. M. Searls of the University of Wisconsin in an article scheduled for an early issue of *SOAP & SANITARY CHEMICALS*. An odorless AA grade spray, made with a highly refined oil base within the kerosene range, can be considered as a satisfactory all-purpose spray under average conditions, says the author, although not all such sprays are satisfactory for agricultural purposes. Don't miss this review of a subject which is of wide interest to both manufacturer and user of insecticide!

Dr. Armstrong in the September issue of *Chemistry and Industry*, published in England.

Fungicide Evaluation

"The Spore-Germination Method of Evaluating Fungicides" is the subject of a bulletin, No. 67, by P. D. Peterson, published by the Crop Protection Institute and based on work carried out at the Delaware Experiment Station. The bulletin deals with an improvement in procedure whereby practical standardization and stabilization of test drops can be attained, resulting in higher efficiency of the method.

Safety in Floor Waxes

(From Page 96)

pounds, anti-slip minerals, lacquers and varnishes, concrete floor paints, abrasive tiles, coating materials for asphalt tile and magnesite floors, and cleanser-coating compounds are also listed by brand name on the acceptable list.

It is pointed out by the company that when one floor compound of a certain manufacturer is listed as acceptable, this does not constitute an

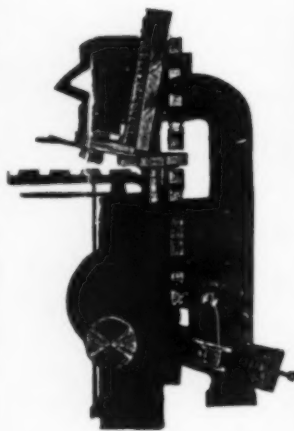
opinion as to the possible acceptability of his other products. It is also made clear that the absence of a product from the list does not imply that it is unacceptable.

A definite improvement has been apparent in the slip characteristics of floor waxes in recent years, according to the company. Whereas about three years ago, only one-half the products tested were found acceptable, today the acceptable proportion is more like three-quarters of those tested.

An interesting observation of the Travelers' laboratory is that a waxed wood floor is usually slippery, especially if the wax is applied after the pores of the wood have been well filled with size or filler, or if applied over paint, varnish or lacquer. Hence they recommend that their assured avoid the use of wax under these conditions on wood floors. Materials recommended for wood floor maintenance are also included in the Travelers acceptable list.

Other insurance companies, such as the Liberty Mutual Liability Insurance Company, of Boston, employ machines for slip testing based on the oblique thrust principle, which give an approximate measure of coefficient of friction. The machine used by Liberty Mutual consists of a right angled frame, with a slotted weight (about nine pounds) sliding between and held in place by the uprights of the frame. A 10-inch thrust arm is pivoted at one end near the center of gravity of the weight and at the other end through the center of the area of a shoe (a maple block 3" x 3"). When the block is raised, it is supported by the friction between the maple block and the floor surface under test. By means of a screw and lug, the shoe may be drawn forward, increasing the horizontal component of force until the shoe slips on the surface, letting the weight drop. The lug is left in the position at which the slip occurred, and marks the coefficient of friction (tangent of the angle of slip) on a graduated scale. The Liberty Mutual company sets the figure .25 or higher as a satisfactory non-slip surface when determined with its machines.

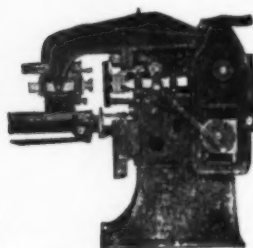
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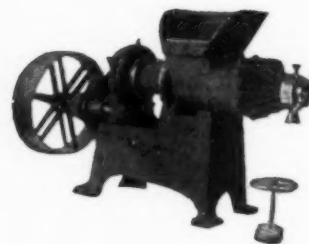
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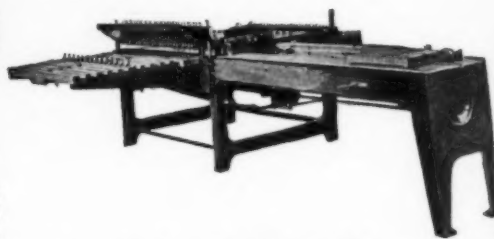
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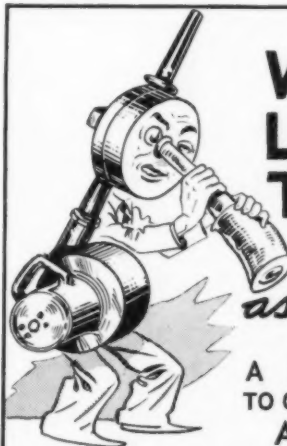
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 SALT WATER SOAPS
 FLOOR SCRUB SOAPS
 POWDERED SOAPS
 SULFONATED OILS

AND OTHER DETERGENT AND ALLIED PRODUCTS

\$7.50 postpaid in the U. S. A.
 (Foreign postage 50c extra)

MAC NAIR-DORLAND COMPANY

254 W. 31st Street

Publishers

New York

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Every effort is made to keep this index free of errors, but no responsibility is assumed for any omission.



"Well, here goes! It's a long way down but what else is there left for a chemical salesman to do?"

... don't jump!

THERE'S plenty for salesmen to do today. In fact, there is a bigger job for your salesmen and advertising to do today than in many a year. Those contacts with your customers are still worth a fortune and will be worth more than ever when this war is over. Don't lose ground in the present scramble. Let your advertising and your salesmen keep your contacts intact!

And particularly if it's in the field of soap products, insecticides, disinfectants, chemical specialties, and the like where you don't want to lose your contacts, we suggest regular advertising in

SOAP and Sanitary Chemicals

254 WEST 31st STREET

NEW YORK

Member Audit Bureau of Circulations

Tale Ends

SOAP prices are reported being checked rather carefully by the OPA and soapers warned not to increase prices without first consulting the OPA. Advances in soap cost to the consumer have been negligible thus far. But in some other directions,—well, maybe the OPA ought to look around before it starts to get too excited about soap prices!

* * *

The gang of fat and oil experts who flew to South America last month for the U. S. Government to count the babassu trees in the Brazilian jungle and let us know when there will be enough babassu to go around, should be back home in the near future. We hope that they bring some good news!

* * *

And, says the OPA no boosting prices via the back-door route, that is cutting quality and selling at the same price. With the help of the National Bureau of Standards, the OPA plans to seek out any such and put the heat on them. So if your shampoo has heretofore been a 20 per cent soap, watch out if you try to cut it down to 15!

* * *

The new 1942 *Blue Book* is just being mailed to *Soap* subscribers. If your subscription is not paid up at the time of publication, we are sorry, but no *Blue Book*. None will be available for later distribution. So check your subscription now,—and if you have received a renewal bill recently, rush in your check immediately, and you will be sure to receive your copy of the new 1942 *Blue Book*.

* * *

At the rate that key men in and about the chemical, soap, insecticide, drug and allied industries are either joining up in the Army or going to Washington for the OPA and the WPB, there will only be old men and the very young left to run things in a short time.

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1942

PROBLEMS

The year 1942 has brought new problems for all soap makers. Severe competition has always existed in the sale and distribution of your finished goods. But today, in addition to competition in production, there exists a mad scramble for raw materials.

Ungerer perfuming materials have always been an aid in solving SALES PROBLEMS. And happily, we

may be of equal service today in the solution of one of your major PRODUCTION PROBLEMS—to be of help in the best possible perfuming of your soaps in the face of a raw material shortage.

If you will welcome aid in your perfuming problems, may we suggest a very easy formula—

"CALL IN UNGERER"

U N G E R E R & C O .

161 SIXTH AVE., NEW YORK, N. Y.



What are Pyrethrum Insecticides used for?

During 1941 our sales of Pyroicide 20 and Pyroicide 40, in mineral oil and other solvents, to manufacturers of Pyrethrum Insecticides, were distributed as follows:

Used by United States Government Departments	7.1%
Used for Medical Purposes, chiefly for prevention of malaria and other mosquito-borne diseases in United States, Brazil, India and Africa	12.7%
Used for Protecting Food Crops from Destruction by Insects especially on sugar beets, beans, cabbage, potatoes, tomatoes, peas, grapes, squash, cucumbers, melons, cranberries and others	28.7%
Used for Destroying Insects that Attack Stored Foods, in flour mills, bakeries, packing plants, wholesale groceries, etc.	14.7%
Used for Protecting Dairy Cows from Insect Pests	12.3%
Used by Home Gardeners	2.7%
Used in Household Insecticides, for destroying flies, mosquitoes, roaches, bed bugs, ants, and other household insect pests	19.2%
Used by Commercial Florists	2.6%
★ ★ ★	100.0%

IF YOU WISH FURTHER INFORMATION ON ANY OF THESE USES FOR PYRETHRUM INSECTICIDE, WRITE TO:

McLaughlin Gormley King Co., MINNEAPOLIS, MINNESOTA

or?

7.1%

2.7%

8.7%

4.7%

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9.2%

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